

State Compendium

Programs and Regulatory Activities Related to Animal Feeding Operations

March 2001

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CHAPTER 1. INTRODUCTION

This compendium has been developed to support the U.S. Environmental Protection Agency's (EPA) efforts to address the environmental and public health problems associated with animal feeding operations (AFOs) and concentrated animal feeding operations (CAFOs). The compendium is a compilation of AFO-related State program and State initiative information intended to illustrate how states are regulating AFOs, with a specific focus on the use of permits or similar mechanisms. This document is not intended as an evaluation of the effectiveness of individual State efforts.

Most of the State programmatic and regulatory information gathered and presented in this document pertains to controlling water quality impacts from AFOs. Although some states have designed regulatory standards to control non-water quality impacts (e.g., set back requirements for odor control), the vast majority of information presented is based on State efforts to address water quality and nutrient management issues.

The Compendium has been compiled from a number of publicly available information sources, including the following:

- Previously published research and existing surveys of State AFO and CAFO programs
- World Wide Web pages of State governments, agencies and national agriculture organizations
- Select publically accessible State statutes and regulations (generally accessed via the Web)
- National Pollutant Discharge Elimination System (NPDES) permits developed for CAFOs
- Summaries of State program information provided by EPA Regional offices

Based on these sources of publicly available information, the Compendium represents a reasonable appraisal of how states are addressing AFO-related environmental problems. Nevertheless, the information presented here is subject to several important limits. First, in compiling this compendium no new formal survey of the states was conducted, nor was a comprehensive review of each state's regulations undertaken, as both were beyond the scope of this task. Thus, in some instances information presented here may be limited or minor gaps may exist. Second, state regulation of AFOs and CAFOs can be complex, involving both federal and state laws and regulations, often originating at the state level from several different agencies, with numerous variations in approaches, requirements, and jurisdiction among the different states. Consequently, different levels of information may be available among states and even between relevant agencies within a state. Finally, the various sources of publicly available information used were reviewed and compiled over a period of time during which many States were reexamining and revising their AFO regulations. As a result, this compendium is by necessity a working document that depicts reasonably current practices, but may in some instances be superseded by recent state programmatic and regulatory changes. The information presented here must be considered subject to these limits and specific regulatory requirements should be verified with state or EPA authorities as appropriate.

The Compendium of State AFO Programs consists of four chapters, including this introduction, and three Appendices. Chapter 2 of this document provides a national overview of State AFO

initiatives based on the publicly available data. It attempts to summarize how states regulate AFOs and highlights key aspects of State AFO programs.

Chapter 3 presents individual state profiles. Each profile includes available information addressing each of the following headings: background, lead regulatory agency, state regulations regarding AFO/CAFOs, types of permits, permit coverage, permit conditions, enforcement information, state voluntary programs, additional state-specific information, and references.

Finally, the Compendium contains three Appendices. Appendix A describe methods used to develop the Compendium and highlights the limits of the data collection efforts. Appendix B lists some of the more frequently used acronyms throughout the compendium. Appendix C provides a glossary of useful terms associated with animal feedlots.

CHAPTER 2. NATIONAL SUMMARY OF STATE INITIATIVES

This chapter presents a national overview of state AFO regulatory programs and initiatives based on a review of publicly available data. The discussion begins with a brief review of the respective federal and state roles in administering the National Pollutant Discharge Elimination System (NPDES) program (Section 2.1), followed by a summary of the existing federal regulations addressing AFOs and CAFOs (Section 2.2). The remainder of this chapter focuses on summarizing State Programs/Initiatives (Section 2.3), and Recent State Initiatives/Trends (Section 2.4).

2.1 Overview of EPA/State Roles in NPDES Program

Under the Clean Water Act (CWA), NPDES permits may be issued by EPA or any state authorized by EPA to implement the NPDES program. Currently, 44 states are authorized to administer the base NPDES program.¹ (The base program includes the federal requirements applicable to AFOs and CAFOs, which are discussed below).² To become an authorized NPDES state, the requirements imposed under a State's NPDES program must at a minimum be as stringent as the requirements imposed under the federal NPDES program. The states, however, may impose requirements that are broader in scope or more stringent than the requirements imposed under the federal NPDES program. In states not authorized to implement the NPDES program, the appropriate EPA Regional office is responsible for implementing the NPDES program.

With regard to the regulation of AFOs, 44 of the states authorized to implement the NPDES program have some form of program requirements generally deemed to be as stringent as the federal requirements applicable to AFOs. Yet, as discussed below, it appears that only a handful of states rely solely on their State NPDES regulations to address CAFOs. Rather, most use their NPDES regulations as one part of their CAFO program and supplement these requirements with additional provisions.

Because the federal CAFO regulations constitute the core program requirements in many authorized states and are used for purposes of comparison and summary in this document, these regulations are briefly summarized below.

2.2 Overview of EPA AFO/CAFO Definitions and Effluent Limits, Under the Federal NPDES Program

Under the federal NPDES program, EPA has developed regulations that define which facilities constitute AFOs and which constitute CAFOs. Under these regulations, facilities that constitute

¹ State NPDES authorization may be obtained for the base program, as well as for components addressing federal facilities, pretreatment, general permits, and sludge. The Virgin Islands is also authorized to administer the NPDES program.

² Alaska, Arizona, Idaho, Massachusetts, New Hampshire, and New Mexico are not currently authorized to implement the NPDES program. Oklahoma is delegated to implement the NPDES program, however, Oklahoma does not issue a general NPDES permit specifically for CAFOs and is in effect unauthorized to administer the CAFO portion of the NPDES program. Oklahoma CAFOs should apply for coverage under the general NPDES CAFO permit issued by U.S. EPA Region 6 (See, 63 FR 53002).

CAFOs are defined as point sources for purposes of the NPDES program. No facility may discharge pollutants from a point source to waters of the United States without a NPDES permit. The existing federal regulatory definitions of AFOs and CAFOs are provided at 40 *C.F.R.* § 122.23 and Part 122, Appendix B. These regulations define an AFO as a facility that meets the following criteria:

- Animals have been, are, or will be stabled or confined and fed or maintained for a total of 45 days or more in any 12-month period
- Crops, vegetation, forage growth, or post-harvest residues are not sustained in the normal growing season over any portion of the lot or facility.³

Federal regulations define a CAFO generally as an animal feeding operation that:

- Confines more than 1,000 animal units (AUs)⁴, or
- Confines between 301 to 1,000 AUs and discharges pollutants:
 - ▶ Into waters of the United States through a man-made ditch, flushing system, or similar man-made device, or
 - ▶ Directly into waters of the United States that originate outside of and pass over, across, or through the facility or otherwise come into direct contact with the animals confined in the operation.

The existing CAFO regulatory definition also provides that facilities that discharge pollutants only in the event of a 25 year, 24-hour storm event are not defined as CAFOs.

In addition, under existing federal regulations, the permitting authority (e.g., EPA or an authorized state) can designate an AFO as a CAFO upon determining that the operation is a significant contributor of pollution to waters of the United States. This determination, which takes a number of factors into account (e.g., slope, vegetation, and the proximity of the operation to surface waters), is based on an onsite inspection by the agency that issues the permits and is subject to certain discharge conditions.

In addition to the provisions that define AFOs and CAFOs, EPA has promulgated an effluent limitation guideline (ELG) applicable to feedlots (feedlots are defined in the same manner as CAFOs) (see 40 *C.F.R.* § 412). This regulation generally establishes that CAFOs are subject to a zero discharge standard except for discharges, resulting from a catastrophic or chronic storm event, that occur from a properly maintained and operated waste management system designed to control waste and runoff from a 25-year, 24-hour storm.

³ 40 *CFR* 122.23 (b)(1).

⁴ The following examples are animal quantities equivalent to 1,000 animal units: 1,000 slaughter and feeder cattle, 700 mature dairy cattle, 2,500 swine each weighing more than 25 kilograms, 30,000 laying hens or broilers (if a facility uses a liquid manure system), and 100,000 laying hens or broilers (if a facility uses continuous overflow watering). See 40 *CFR* Part 122, Appendix B.

2.3 State Programs/Initiatives

The national summary of state programs and initiatives is divided into four categories: (1) regulatory programs used by states, (2) State definitions of CAFO/AFO, (3) use of general versus individual permits, and (4) key permit conditions.

2.3.1 Regulatory Approach

Figure 1 provides a state-by-state depiction of the AFO permitting mechanisms available in each state. States have five categories of permitting mechanisms:

- Federally Administered NPDES Program
- Federally Administered NPDES Program and State Administered Non-NPDES Program
- State Administered NPDES Program only
- State Administered NPDES Program and State Administered Non-NPDES Program
- State Administered Non-NPDES Program only

As discussed above, 44 states are authorized to implement the base NPDES CAFO program. As illustrated in Figure 1 and summarized in Table 1, of the 44 states authorized to implement the NPDES CAFO program:

- Twenty-five states administer a State NPDES CAFO program in combination with some other state permit, license, or authorization program. Typically, this additional State authorization is a construction or operating permit.
- Eight states regulate CAFOs exclusively under their state NPDES authority (HI, ME, NJ, NV, NY, RI, TN, WV).
- Five states have chosen to solely regulate CAFOs under State non-NPDES programs (CO, MI, NC, OR, SC).

Of the six states not authorized to administer the NPDES program:

- Three rely solely on federal NPDES permits to address CAFOs (AK, MA, NH).
- Three impose some form of a state non-NPDES program requirement, although EPA remains responsible for administering the NPDES CAFO requirements in these states (AZ, ID, NM).

While Oklahoma is one of the 44 NPDES-delegated states, Oklahoma does not have a general NPDES permit specific to CAFOs. In this special case, Region 6 administers the portion of Oklahoma's NPDES program that deals with CAFOs by covering Oklahoma CAFOs under the Region 6 general NPDES permit for CAFOs. Oklahoma also uses a State non-NPDES operating permit to regulate state CAFOs.

Overall, 28 states have a combination of permitting mechanisms available for addressing environmental impacts from AFOs. Eleven states exclusively regulate CAFOs under a state or federal NPDES program. Five states (CO, MI, NC, SC and OR) only regulate AFOs under a

Permits Used

- Federally Administered NPDES Program
- Federally Administered NPDES Program and State Administered Non-NPDES Program
- State Administered NPDES Program
- Federally Administered NPDES Program and State Administered Non-NPDES Program
- State Administered Non-NPDES Program

Figure 1. Regulatory Mechanisms for AFO Permitting in Each State

EPA and state definitions of a CAFO are important because the definitions determine the scope of the existing federal and state regulatory programs. As discussed above, EPA's definition of a CAFO is based on the length of time animals are confined, the number of animals (animal units) confined, and whether or not the facility directly discharges pollutants into waters of the United States. Virtually all state NPDES CAFO programs use the federal definition for CAFO. The vast majority of states also use the federal definition of CAFO for State non-NPDES CAFO programs. Several states, however, use a lower numeric threshold (i.e., number of animal units) for non-NPDES permitting. For example, Minnesota issues individual NPDES permits to confined feeding operations as defined by federal regulation and State feedlot permits (non-NPDES) to facilities with more than 10 animal units (calculated by using the formula used in the federal definition).

States that use the federal definition of CAFO may also increase the scope of coverage required through state NPDES programs by similarly reducing the number of animals (i.e., number of animal units) a facility can confine before being subject to permitting.

Table 1. Identification of Permit Type and Permit Requirements Within State AFO Programs in the United States¹

State	State NPDES	State Control Mechanism ² (non-NPDES)		General/ Individual Permits				Permit Conditions ³			
		Construction	Operating	NPDES		State non-NPDES		Effluent ⁴	Management	Land Application	
				General	Individual	General	Individual			Agronomic Rates	Offsite
AL	✓	✓	✓	✓	✓			✓	✓		
AK	ND ⁵										
AR	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓
AZ	ND		✓			✓				✓	
CA	✓	✓	✓	✓			✓	✓		✓	
CO	*	✓	✓				✓	✓	✓	✓	
CT	✓	✓			✓		✓	✓	✓	✓	
DE	✓		✓								
FL	✓	✓	✓		✓			✓		✓	
GA	✓		✓	✓	✓		✓		✓	✓	
HI	✓				✓						
IA	✓	✓	✓		✓		✓	✓	✓	✓	✓
ID	ND	✓	✓	✓			✓	✓	✓	✓	✓
IL	✓	✓	✓	✓	✓		✓	✓	✓	✓	
IN	✓	✓	✓		✓				✓	✓	
KY	✓	✓	✓			✓	✓	✓	✓	✓	✓

Table 1. Identification of Permit Type and Permit Requirements Within State AFO Programs in the United States¹

State	State NPDES	State Control Mechanism ² (non-NPDES)		General/ Individual Permits				Permit Conditions ³			
		Construction	Operating	NPDES		State non-NPDES		Effluent ⁴	Management	Land Application	
				General	Individual	General	Individual			Agronomic Rates	Offsite
KS	✓	✓	✓		✓	✓	✓		✓	✓	✓
LA	✓		✓		✓		✓	✓	✓	✓	
MA	ND										
MD	✓	✓		✓	✓		✓	✓	✓		
ME	✓				✓			✓	✓	✓	✓
MI	*										
MN	✓	✓	✓		✓		✓	✓	✓	✓	
MO	✓	✓	✓	✓	✓		✓	✓	✓	✓	
MS	✓		✓	✓	✓	✓	✓	✓			
MT	✓	✓	✓	✓	✓	✓	✓	✓		✓	
NE	✓	✓	✓		✓		✓	✓	✓	✓	
NC	*		✓			✓	✓	✓	✓	✓	
ND	✓	✓	✓		✓		✓	✓	✓	✓	
NH	ND										
NJ	✓				✓					✓	
NM	ND		✓				✓		✓	✓	

Table 1. Identification of Permit Type and Permit Requirements Within State AFO Programs in the United States¹

State	State NPDES	State Control Mechanism ² (non-NPDES)		General/ Individual Permits				Permit Conditions ³			
		Construction	Operating	NPDES		State non-NPDES		Effluent ⁴	Management	Land Application	
				General	Individual	General	Individual			Agronomic Rates	Offsite
NV	✓				✓						
NY	✓			✓				✓	✓		
OH	✓	✓	✓	✓	✓		✓	✓	✓	✓	
OK	✓	✓	✓	✓	✓		✓	✓	✓	✓	
OR	*	✓	✓			✓	✓			✓	
PA	✓		✓	✓	✓			✓	✓	✓	✓
RI	✓				✓						
SC	*	✓	✓			✓	✓	✓	✓	✓	
SD	✓	✓	✓	✓			✓	✓	✓		
TN	✓			✓	✓			✓			
TX	✓		✓	✓	✓		✓	✓	✓	✓	
UT	✓	✓	✓	✓	✓		✓		✓		
VA	✓		✓			✓	✓	✓	✓	✓	
VT	✓	✓					✓	✓		✓	
WA	✓		✓	✓	✓	✓	✓	✓	✓	✓	
WI	✓	✓	✓	✓	✓			✓		✓	

Table 1. Identification of Permit Type and Permit Requirements Within State AFO Programs in the United States¹

State	State NPDES	State Control Mechanism ² (non-NPDES)		General/ Individual Permits				Permit Conditions ³			
		Construction	Operating	NPDES		State non-NPDES		Effluent ⁴	Management	Land Application	
				General	Individual	General	Individual			Agronomic Rates	Offsite
WV	✓							✓	✓		
WY	✓	✓			✓		✓	✓	✓	✓	
Totals	39	27	34	20	30	11	31	34	32	34	7

¹ Blank data cells indicate that the program element was not a primary component of the state program or information was not sufficient to make a determination.

² State control mechanisms include all forms of formal state approval required to construct or operate an AFO, such as state issued non-NPDES permits, letters of approval, and certificates of coverage.

³ Permit conditions are requirements imposed through either NPDES or state non-NPDES programs.

⁴ Effluent limits refer to whether or not a state imposes federal effluent limits to AFOs/CAFOs (i.e., no discharge allowed except during 25 year, 24- hour storms). A check could indicate that a state imposes effluent limits that are more strict than the federal requirements (e.g., Arkansas does not allow any discharges regardless of storm events).

⁵ ND = States not authorized to administer the NPDES program.

* Although authorized to administer the NPDES program, the state chooses to use a separate program to address AFOs.

Table 2 presents examples of states that have developed unique definitions for their livestock regulatory programs that do not follow the federal definition. States typically base their definition on number of animals confined, weight of animals and design capacity of waste control system, or gross income of agricultural operation. These definitions are exclusively applied to State non-NPDES programs.

Table 2. Selected State CAFO Definitions that Differ from the EPA Definition and Use of the Definition in Regulatory Control.

State	Classification Scheme	Facilities Subject to State Non-NPDES Regulatory
Indiana	Number of Animals	Operation with 600 swine, 300 cattle, or 30,000 birds
Iowa	Weight of Animals in a Confinement Feeding Operation	Permitting threshold for construction permit based on type of waste control system and design capacity (based on weight) of that system (e.g., an anaerobic lagoon with a design capacity of 400,000 lbs of bovine requires construction permits)
Kansas	Number of Animals	Operations with 300 animal units
Maryland	Gross Income and Animal Units	All agricultural operations with incomes of at least \$2,500 or eight animal units
North Carolina	Number of Animals	Operations designed for 100 head of cattle, 75 horses, 250 swine, 1,000 sheep, or 30,000 birds

One important difference between state livestock regulatory programs and the federal program is that numerous states have addressed the issue of authority to issue permits (or other control mechanisms) to CAFOs by requiring that all or a specified subgroup of CAFOs - regardless of whether they have a direct point source discharge of pollutants to U.S. waters - obtain a permit.⁵ This requirement is imposed under state, not federal regulations.

For example, the State of Arkansas requires all AFOs that use a liquid waste management system to obtain permit coverage under either the State-issued general permit or an individual permit. AFOs with dry waste management systems are not automatically required to obtain a permit; however, all facilities with more than 1,000 animal units are subject to coverage under the State's general permit. This is an important distinction because states have opted to expand the scope of facilities that fall within the definition of a CAFO by eliminating the requirement that a facility must have a discharge before being considered a CAFO. In other words, states are requiring large facilities with a potential to discharge to abide by CAFO rules.

2.3.3 General/Individual Permits

The regulation of CAFOs is challenging, in part, because of the large number of facilities across the country. In 1995, it was estimated that 450,000 operations nationwide confined or

⁵ Preliminary state data indicate that the following states require all or a subset of CAFOs (under various definitions) to obtain permits: AL, AR, AZ, CO, DE, IA, ID, IN, KS, KY, MN, MS, NC, OH, OR, SC, WY.

concentrated animals, of which a very conservative estimate indicated that at least 6,600 had more than 1,000 animal units and may have been considered CAFOs under the federal definition⁶. More recent estimates describe an AFO universe of approximately 375,700 operations of which approximately 12,600 are AFO operations with more than 1,000 AUs, 26,500 are AFO operations with 300 - 1,000 AUs, and 336,600 are AFO operations with less than 300 AUs.⁷ One way of reducing the administrative burden associated with permitting such large numbers of facilities is through general permits. Existing regulations provide that general permits may be issued to cover a category of discharges within a geographic region. Within such areas, general permits may regulate either storm water point sources or a category of point sources that involves similar operations with similar wastes. Operations subject to the same effluent limitations and operating conditions, and requiring similar monitoring, are most appropriately regulated under a general permit. EPA and the states are using general permits to regulate CAFOs, and this trend appears to be increasing. South Dakota, for example, has established two general permits for CAFOs, one to address swine operations and another for all other livestock.

Of the 44 states authorized to implement the NPDES program:

- Twenty have issued a State NPDES general permit for CAFOs (this number excludes federally issued general permits).
- Eleven have issued a state non-NPDES general permit for CAFOs.

Of the six states not authorized to administer the NPDES program (this excludes Oklahoma), four are subject to a federal general permit.⁸

2.3.4 Permit Conditions

Normally, a NPDES permit will include several types of permit conditions, including technology-based effluent limits (i.e., zero discharge except for discharges resulting from chronic or catastrophic rainfall events if a facility is designed to hold process wastewater and runoff from a 25-year, 24-hour storm for CAFOs subject to § 412), water quality-based effluent limits (if the technology-based limit will not ensure compliance with State water quality standards), monitoring and reporting conditions, special conditions (e.g., conditions that impose additional controls beyond numeric limits, such as best management practices [BMPs]), and standard conditions (e.g., duty to comply, duty to ensure proper operation, and duty to provide information).

⁶ *Animal Agriculture: Information on Waste Management and Water Quality Issues*, General Accounting Office, 1995.

⁷ 66 FR 2985, January 12, 2001.

⁸ CAFOs in New Mexico and Oklahoma are subject to an EPA Region 6 general permit; facilities in Idaho and Alaska are subject to an EPA Region 10 permit, although no facilities are covered under a NPDES permit in Alaska; and CAFOs in Arizona are subject to an EPA Region 9 general permit, although no facilities are covered under the general permit. New Hampshire, and Massachusetts are located in EPA Region 1, which does not have a general NPDES permit for CAFOs.

As discussed above, the federal technology-based effluent limit for CAFOs is no discharge. The effluent limit includes an exception in the event of chronic or catastrophic rain for facilities designed, constructed, and operated to contain all waste water and runoff from a 25-year, 24-hour storm. States not authorized to implement the NPDES program must use this federal effluent limit.

Authorized states generally are equally as stringent, but may be more stringent. Based on a review of available data, of the 44 states authorized to implement the NPDES program:

- Thirty-four use the federal effluent limitation guideline
- Six use a more stringent limit

Some states with more stringent effluent limits may partially or totally prohibit discharges related to storm events. In Arkansas, for example, the effluent limit prohibits discharges from liquid waste management systems, including periods of precipitation greater than the 25-year, 24-hour storm event. California requires no discharges from new waste control structures even during 100-year storms. And in Iowa confinement feeding operation (i.e., roofed AFOs) are prohibited from any direct discharge and must dispose of manure in a manner that will not cause a pollution of surface or ground water.

A key concern regarding the management of CAFO waste is ensuring appropriate land application. Land application is the primary management practice used by CAFOs to dispose of animal waste. Several estimates indicate that 90 percent of CAFO-generated waste is land applied. Where properly done, land application of CAFO waste fosters the reuse of the nitrogen, phosphorus, and potassium contained in these wastes for crop growth. However, where such wastes are excessively or improperly applied, land application can contribute to water quality impairment. Thirty-four states impose requirements addressing land application either through NPDES or non-NPDES programs. Typical requirements include that CAFO waste be applied at agronomic rates and that CAFO operators develop Waste Management Plans.

The breakout of state requirements is as follows:

- Thirty-four states require that CAFO waste be land applied at agronomic rates.
- Thirty-four states require the development and use of Waste Management Plans.
- One state, Georgia, issues land application system (LAS) permits.

Agronomic rates are typically based on the nitrogen needs of crops, although some states specify that waste be applied at agronomic rates for nitrogen and phosphorous. The determination of agronomic rates varies from state to state. Some states do not address how agronomic rates should be determined, while others, such as Colorado, require CAFO operators to complete detailed plans and field sampling to determine the appropriate amount of waste that can be land applied.

The complexity and details required in a Waste Management Plan also vary among states. Some states do not explicitly identify what items must be addressed in a Waste Management Plan, whereas others have detailed requirements. Typically, CAFO operators are required to address the following in a Waste Management Plan:

- Estimates of the annual volume of waste
- Schedules for emptying and applying wastes
- Rates and locations for applying wastes
- Provisions for determining agronomic rates (i.e., soil testing)
- Provisions for conducting required monitoring and reporting
- Written agreements with landowners to accept liquid waste

2.4 Recent State Initiatives/Trends

One clear indication that states have an increasing interest in expanding their efforts to control water quality impacts from AFOs is the promulgation of new state AFO laws, regulations and program initiatives. At least 28 states have developed new laws or regulations related to AFOs since 1996. For example, Kansas, Kentucky, North Carolina, and Wyoming passed legislation regarding swine facilities, with Kentucky and North Carolina imposing moratoriums on the expansion of swine AFOs until state management/regulatory plans could be developed. Similarly, Mississippi also has imposed a 2-year moratorium on any new CAFOs.

Alabama's recent efforts include developing an NPDES general permitting rule and a Memorandum of Agreement outlining state agency responsibilities as they relate to AFOs. Washington's Dairy Law subjects all dairy farms with more than 300 animal units to permitting and requires each facility to develop NRCS-approved nutrient management plans. Indiana's Confined Feeding Control Law also requires AFOs to develop waste management plans and receive state approval for operating AFOs.

2.5 Summary

As discussed above, state efforts to manage AFOs are carried out through issuance of NPDES permits and state issued non-NPDES permits and/or authorizations. State AFO regulatory programs are directed in large part at controlling the potential environmental impacts on surface water, but also at protecting ground water and managing industry growth. State permits and/or authorization requirements are often imposed regardless of NPDES requirements. State non-NPDES AFO programs are often more stringent than NPDES programs and state efforts often extend coverage to smaller classes of AFOs. Further, the implementation of state non-NPDES programs often receives more agency attention than the implementation of NPDES programs, with several states actively choosing not to use NPDES permits.

While specific state efforts relating to AFOs vary, most states regulate facilities through permitting programs that require animal waste disposal systems to be constructed to prevent the discharge of animal wastes to waters of the United States. Coverage under state permitting programs depends on such criteria as facility size, potential for discharge, type of facility, and type of waste control. Information from across the nation indicates that state agencies are increasing their commitment of resources to address environmental concerns from AFOs.

CHAPTER 3. STATE PROFILES

This chapter presents individual profiles of state programmatic and regulatory efforts addressing AFOs for each of the 50 states. These profiles provide a state-by-state summary of the key elements within State AFO regulatory programs. The profiles identify and summarize existing State activities used to address environmental and health impacts from AFOs. The profiles provide a comprehensive overview of each State program and include the following information for each state:

- A description of the lead regulatory agency(ies) (i.e., permitting authority) and agency(ies) responsible for directing voluntary programs.
- State regulations that address AFOs and voluntary programs that encourage regulatory compliance or the use of best management practices.
- The types of permits issued and the permitting processes for each state, the circumstances for which permits are required (i.e., permit coverage), and the requirements and responsibilities of AFO owners and operators (i.e., permit conditions).
- State enforcement activities, inspection programs, and staffing and funding levels dedicated to addressing AFOs.
- Examples of innovative or interesting state-level projects or programs developed to control the potential negative environmental impacts of AFOs.

If information on a particular program element was not readily available, or not identified, the following phrase was used: "no information was found in publically available sources." Figure 3.1 presents the outline used for each of the state profiles.

- 1.0 Background
- 2.0 Lead Regulatory Agency
- 3.0 State Regulations Regarding AFOs/CAFOs
- 4.0 Type of Permits
 - NPDES*
 - Other (general use or general agriculture permits, construction permits, and operating permits)*
- 5.0 Permit Coverage (potential nuisance and/or location)
- 6.0 Permit Conditions
 - Approvals (permits, letters of intent, or certificates of coverage)*
 - Lagoon Design and Specifications (seepage limits, etc.)*
 - Discharge Rules*
 - Waste Management Plans*
 - Separation Distances*
 - Land Application Requirements*
 - Other Requirements*
- 7.0 Enforcement Information
 - General Enforcement Information*
 - General Inspection Information*
- 8.0 Voluntary Programs
- 9.0 Additional State-Specific Information
 - Cooperative Extension Service*
 - Comprehensive Nutrient Management Plan (CNMP)*
 - Memorandums of Understanding/Agreement (MOUs/MOAs)*
 - Other Information*
- 10.0 References

Figure 3.1 Outline Used for Profiles of State Programs and Regulatory Activities Related to Animal Feeding Operations.

Alabama's CAFO Program

1.0 Background

Based upon information provided to EPA by USDA it is estimated that there are 1,237 AFOs with from 300 to 1,000 animal units and 580 AFOs with more than 1,000 animal units in Alabama. These are primarily in the broiler sector (USDA, 1999; USDA, 2000).

A public hearing was held on August 11, 2000, before the Department of Environmental Management of the state of Alabama. The hearing was held to give interested persons an opportunity to provide additional information or comments regarding the proposed revised regulations for the existing AFO compliance program and CAFO registration program (Chapter 335-6-7). The revised regulations were issued December 1, 2000.

2.0 Lead Regulatory Agency

The Alabama Department of Environmental Management (ADEM), Water Division, has jurisdiction over industrial water pollution permitting (Jessup 1990). ADEM information can be found at www.adem.state.al.us.

3.0 State Regulations Regarding AFOs/CAFOs

Water quality is governed through Alabama's NPDES Program, ADEM Administrative Code Chapter 335-6-6. Section 335-6-6-.10 identifies CAFOs, detailed in Chapter 335-6-7 and described by Title 40 of the Code of Federal Regulations (CFR), section 122.23 and 40 CFR, Part 122, Appendix B, as a category that requires NPDES permits.

Alabama Administrative Code Chapter 335-6-7 establishes minimum qualifications, standards, requirements, best management practices, land application practices, and waste storage and disposal requirements to protect water quality within the state pursuant to the requirements of the NPDES program. The specific text of Chapters 335-6-6 and 335-6-7 can be found at www.adem.state.al.us/RegsPermit/ADEMRegs/Div6Vol1/rdiv6v1.html.

As of December 2000, Alabama issued revisions to Chapter 335-6-7. The revisions are designed to clarify and strengthen existing administrative requirements and technical standards and guidelines. Under the revisions, new or expanding AFOs with liquid waste management systems would be required to maintain an increased minimum buffer distance from property lines, water bodies, existing parks, hospitals, occupied dwellings, and so forth. Increased buffers are one of many management practices that can minimize off-site odors from AFOs to the extent practicable and ensure protection of water quality. The revisions are designed to further the required implementation of animal agriculture waste management practices that meet or exceed technical standards and guidelines of the U.S. Department of Agriculture's Natural Resources Conservation Service (NRCS). The rules will continue to prohibit discharges into ground water or surface waters.

The following are some changes to the regulations:

- Operators would be required to implement odor and nuisance pest minimization BMPs in the operation of animal waste management systems. (335-6-7.01 (4))

- The definition of an animal unit (AU) would change. (335-6-7-.02 (I))
- The number and types of animals used to determine whether a CAFO is an AFO that is subject to NPDES permitting would change. (335-6-7.10 (4a,b))
- New or additional confinement buildings with a liquid/wastewater handling system, or any liquid waste storage settling basins, lagoons, holding ponds, pits, or sumps, and other animal liquid waste containment structures may not be constructed within 500 feet of an existing off-site potable water well, or within 200 feet of a perennial non-headwater watercourse. In no case may such structures be constructed closer than 500 feet for fewer than 1000 AUs, 1,320 feet for 1,000 to 2,499 AUs, 2,640 feet for 2,500 to 3,999 AUs, and 5,280 feet for 4,000 or more AUs. (335-6-7.20(8))
- No new wells may be constructed within 100 feet of any waste/wastewater handling systems, transport structures, or treatment structures, or confinement buildings, settling basins, lagoons, holding ponds, sumps, pits, and other agricultural waste containment/treatment structures. (335-6-7-.20(9))
- Unless extended in writing by the Director or his designee, no later than January 1, 2003, all AFOs/CAFOs in the North Alabama area must implement provisions to provide for a minimum of 180-day waste/wastewater storage/retention/holding capacity. After December 1, 2000, new or expanding AFOs/CAFOs in the North Alabama area must implement the 180-day permanent/temporary storage requirement prior to commencing initial operation and/or expanded operations. (335-6-7-.20(24))
- Unless extended in writing by the Director or his designee, no later than January 1, 2003, all AFOs/CAFOs in the South Alabama area as designated in NRCS technical standards and guidelines, must implement provisions to provide for a minimum of 120-day waste/wastewater storage/retention/holding capacity. After December 1, 2000, new or expanding AFOs/CAFOs in the South Alabama area must implement the 120-day permanent/temporary storage requirement prior to commencing initial operation and/or expanded operations. (335-6-7-.20(24a))
- After December 1, 2000, construction of new or expanded manure storage pits or waste/wastewater storage ponds at all AFOs/CAFOs is prohibited unless the owner/operator submits in writing a demonstration acceptable to the Director that the use of the storage pits or ponds will protect water quality and will minimize odors to the maximum extent practicable. (335-6-7.20(25))
- Waste application near property lines or neighboring occupied buildings must be done in a manner that meets or exceeds NRCS technical standards and guidelines, but in no case may waste application be closer than 100 feet from the nearest occupied dwelling, church, school, hospital, or park. (335-6-7-.26 (2o))
- Aerial or spray irrigation or another type of pumped or pressurized surface land application of wastewater must be done in a manner that meets or exceeds NRCS technical standards and guidelines, but in no case may waste application be closer than 500 feet from the nearest occupied dwelling, church, school, hospital, or park. Non-pumped surface application, or soil subsurface injection/application of wastewater must be done in a manner that meets or exceeds NRCS technical standards and guidelines, but in no case may it be closer than 200

feet from the nearest existing occupied dwelling, church, school, hospital, or park. (335-6-7-.26 (2p))

For more specific information and the actual text of the rule, refer to the ADEM web site at www.adem.state.al.us.

4.0 Types of Permits

NPDES

Alabama is authorized to issue individual NPDES permits as well as general NPDES permits.

5.0 Permit Coverage

Alabama regulations (ACR Chapter 335-6-6-.10) governing water quality require NPDES permits for CAFOs as described in 40 CFR 122.23, Appendix B (1994) and 40 CFR 122.23(c) (1994) and defined in Rule 335-6-7-.10.

The new regulations (ACR Chapter 335-6-7-.03) provide a general NPDES permit for all registered AFOs and CAFOs. The rule requires registration from all CAFOs (AFO facilities with more than 1,000 animal units) and may require registration from some AFOs as generally defined in 40 CFR 122.23(b)(1). In addition, the definition for CAFOs has been extended to include the following, among others: all AFOs that have had a point source or nonpoint source discharge after April 1, 1999; any new or existing AFO with at least 100 animal units that is located in a priority, threatened, or water quality limited/impaired watershed; or any AFO designated as a significant contributor or potential significant contributor to pollution that violates applicable state water quality standards. Any registered CAFO may be required to apply for and obtain an individual NPDES permit. (ACR 335-6-7.07)

A Notice of Registration (NOR) is required for all new and existing facilities. Approval of registration constitutes NPDES permit coverage as provided in Chapter 335-6-6.

ACR Chapter 335-6-7 applies to the construction, operation, maintenance, repair, and closure of stockyards, auction or buyer yards, facilities, or operations used for cattle, swine, poultry, fowl, and/or dairy animals. The provisions also extend to any other AFOs or facilities for wild or domesticated animals as designated by ADEM.

6.0 Permit Conditions

Approvals

Under the new regulations, initial construction or expansion of an AFO that exceeds 1 acre must be registered under ACR Chapter 335-6-7-.07. The old regulations required registration for exceeding 5 acres.

Lagoon Design and Specifications

All design standards must meet or exceed NRCS standards and guidelines, and designs must be approved by a qualified professional (USEPA, 1998). The freeboard cannot be less than 12 inches, and a subsurface soil investigation will be performed to determine the suitability of the

waste containment structure to meet liner requirements. (ACR Chapter 335-6-7-.25)

Discharge Rules

Discharge from any AFO to waters of the state are prohibited except in the event of a 25-year, 24-hour storm event. (ACR Chapter 335-6-7.25)

Waste Management Plans

All AFOs must implement comprehensive waste management system (WMS) BMPs that meet or exceed NRCS technical standards and guidelines. (ACR 335-6-7.04) Owners and operators of CAFOs must submit their WMS plans for approval by a Qualified Credential Professional (QCP) and ADEM before beginning to implement them. The Code of Alabama, Chapter 335, Section 6-7-.02, defines a QCP as:

- Any staff member of the ADEM designated by the director
- Professional Engineer registered in Alabama
- U.S. Department of Agriculture (USDA)-NRCS representative
- USDA-NRCS-approved professional
- Any other qualified professional or professional designation acceptable to the ADEM

QCPs must have documentation to prove they have training and experience in designing, implementing, and inspecting comprehensive animal waste, waste product, and dead animal disposal management practices and systems plans (§335-6-7.02). The Code of Alabama defines a waste management system plan as a comprehensive plan that meets or exceeds NRCS technical standards and guidelines, NRCS Comprehensive Nutrient Management Plan (CNMP) guidelines, the requirements of the Code of Alabama, Chapter 335, Section 6-7, and applicable requirements of the federal Clean Water Act (CWA).

Separation Distances

According to ACR Chapter 335-6-7.20, animal liquid waste containment structures for new operations must be at least 1,320 feet from the nearest existing occupied dwelling, church, school, hospital, or park and at least 500 feet from any property line. Dry waste confinement buildings must not be within 330 feet of occupied buildings or parks. If the proposed revisions are accepted, dry waste confinement building also may not be within 165 feet of any property line. Setback distances for other new or additional confinement buildings for dry and/or liquid waste handling, storage, or treatment range from 550 feet from any property line to 100 feet from any stream, pond, lake, well, or water supply. (ACR Chapter 335-6-7.20)

Land Application Requirements

Land application of waste/wastewater (outlined in ACR Chapter 335-6-7-.26) must be performed in accordance with NRCS technical standards. Prohibitions include not applying wastes on frozen soil, near Outstanding Natural Resource Water (ONRW) or surface waters, or on slopes with steep grades. Land application sites must be identified in the WMS plan.

Pollution Prevention Plans

In addition to a WMS plan, pollution prevention plans (PPPs) are required to be developed and

implemented by CAFO facilities in accordance with the EPA storm water rules promulgated on November 19, 1990. The requirements for a PPP are considered to be met by a facility that has been properly designed and has received registration approval under a Notice of Registration. (ACR Chapter 335-6-7-.28) Soil sampling (0 to 3 inches in sod crop areas and the depth of the plow layer in cultivated crop areas) is required where waste or wastewater has been land applied. (ACR Chapter 335-6-7.26) The sampling frequency should meet NRCS technical standards and guidelines as well as protect the quality of surface water and ground water.

7.0 Enforcement Information

General Enforcement Information

If facilities fail to comply with the requirements of Chapters 335-6-6 and 335-6-7, they may be subject to enforcement actions (specific actions were not specified). Failure to fully implement and regularly maintain BMPs for the protection of water quality and to minimize odors to the maximum extent possible may subject the owner/operator of the AFO to appropriate enforcement action. (335-6-7-.04 (1))

General Inspection Information

Routine inspections will be conducted under the AFO/CAFO program, but the emphasis will be placed on responding to complaints (USEPA, 1998). Any owner or operator of a facility must permit ADEM representatives to enter, at all reasonable times, property and buildings at the facility and allow the representative to inspect facilities and equipment, review records, and to conduct monitoring and sampling. (Chapter 335-6-7.17)

Number of CAFO Facilities

As of July 2000, ADEM had received 266 AFO registrations. Of these registrations, 94 were approved as of July 5, 2000 (ADEM, 2000c).

8.0 Voluntary Programs

The State (Alabama Department of Agriculture) will train operators of CAFO waste systems and reduce CAFO permitting fees for those operators who receive training (Linville, 1997).

9.0 Additional State-Specific Information

Cooperative Extension Service

The Alabama Cooperative Extension System, through Auburn University, takes research-based agricultural knowledge and education from land-grant universities and provides it to the public. More information about the extension system can be found at www.aces.edu.

Comprehensive Nutrient Management Plan (CNMP) Certification

Alabama does not have a CNMP preparer certification program.

Memorandum of Agreement

As part of Alabama's rules, the state developed a Memorandum of Agreement (MOA) outlining the responsibilities of the different state and federal resource agencies as they relate to the management of CAFOs (Linville, 1997).

The final signatories of the MOA include the following:

- Alabama Cooperative Extension System
- Alabama Department of Agriculture and Industries
- Alabama Department of Environmental Management
- Alabama Department of Public Health
- Alabama Soil and Water Conservation Committee
- College of Agriculture at Auburn University
- USDA-NRCS

Other Information

All managing owners, operators, and on-site supervisors of CAFOs must complete formal education and training to receive certification from ADEM. The Operator Certification Program was developed by ADEM in April 1999 and is currently implemented by the Department. The program requires operators to take up to 16 hours of approved group or individualized training and continuing education (§335-6-7.18). Key components of the certification include:

- Best management practices (BMPs)
- Comprehensive waste and wastewater management
- Land application
- Nutrient budgeting
- Dead animal disposal
- Other appropriate areas

Proof of certification must be submitted to ADEM within one year after enrollment of the program (§335-6-7.18). Also, ADEM must approve initial training requirements, including appropriate curricula, course content, course length, participant testing, evaluation of the effectiveness and applicability of the training, and total hours of training required. (§335-6-7.18)

10.0 References

ADEM. 2000a. *ADEM Notice of Rulemaking*. Alabama Department of Environmental Management. <www.adem.state.al.us/RegsPermit/PropRules/phcafo06.html>. Accessed August 2000.

ADEM. 2000b. *ADEM Proposed Rules: Proposed Changes to Division 6, Volume 1, Chapter 7*. August 18, 2000. Alabama Department of Environmental Management. <www.adem.state.al.us/RegsPermit/PropRules/proprule.htm>. Accessed August 2000.

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Alaska's CAFO Program

1.0 Background

Data provided by USDA to EPA identifies a very limited number of AFOs in Alaska (USDA, 1999; USDA, 2000).

2.0 Lead Regulatory Agency

Because this state is not authorized to administer the NPDES program, U.S. EPA Region 10 is the CAFO permitting authority for Alaska.

3.0 State Regulations Regarding AFOs/CAFOs

No regulations pertaining to AFOs or CAFOs has been identified.

4.0 Types of Permits

NPDES

Alaska is not authorized by EPA to administer NPDES permits for CAFOs. In addition, Alaska does not have a state program to regulate animal waste (AKDEC, 2000). Therefore, the federal CAFO regulations apply within the state. CAFO NPDES permits are issued through EPA Region 10, which partners with USDA's Natural Resources Conservation Service to help regulate CAFOs and coordinate educational efforts (USEPA, 2000).

5.0 Permit Coverage

No information was found in publically available sources.

6.0 Permit Conditions

No information was found in publically available sources.

7.0 Enforcement Information

No information was found in publically available sources.

8.0 Voluntary Programs

No information was found in publically available sources.

9.0 Additional State-Specific Information

Cooperative Extension Service

Information about the University of Alaska, Fairbanks, Cooperative Extension is available at <http://zorba.uafadm.alaska.edu/coop-ext/index.html>.

Comprehensive Nutrient Management Plan (CNMP) Certification

Alaska does not have a CNMP preparer certification program.

10.0 References

- AKDEC. 2000. *Division of Air and Water Quality*. Alaska Department of Environmental Conservation. <www.state.ak.us/local/akpages/ENV.CONSERV/dawq/dec_dawq.htm>. Accessed May 2000.
- Roberto, Joe. US Environmental Protection Agency, Region 10. Summary of state program information sent to Ruth Much (SAIC), fall 1997.
- USDA. 1999. *1997 Census of Agriculture: Geographic Area Series*. U.S. Department of Agricultural Statistics Service, Washington, DC.
- USDA. 2000. Specific queries conducted on the 1997 Census of Agriculture published data. U.S. Department of Agriculture.
- USEPA. 2000. *Region 10*. U.S. Environmental Protection Agency, Region 10. <www.epa.gov/r10earth/index.htm>. Accessed May 2000.

Arizona's CAFO Program

1.0 Background

Based upon information provided to EPA by USDA in the year 2000 it is estimated that there are 38 AFOs with from 300 to 1,000 animal units and 80 AFOs with more than 1,000 animal units in Arizona. These are primarily in the dairy sector (USDA, 1999; USDA, 2000). Arizona's CAFOs are concentrated; approximately 70 to 90 percent of the operations are located in Maricopa, Pinal, and Yuma counties (USEPA, 2000).

Although Arizona's 1996 Water Quality Assessment listed waterbodies impaired from stressors such as nutrients and coliforms, no waterbodies were listed specifically because of CAFOs (USEPA, 1998).

2.0 Lead Regulatory Agency

The Arizona Department of Environmental Quality (ADEQ) administers nonpoint source programs to minimize the impacts of CAFOs on the surface waters and ground water of the state. EPA Region 9 has issued a general NPDES permit to cover CAFO facilities in Arizona (Oda, 1997). More information about ADEQ can be found at www.adeq.state.az.us/.

3.0 State Regulations Regarding AFOs/CAFOs

Arizona Revised Statutes (ARS) 3-1451 through 3-1456 define beef cattle feedlots, require feedlot operators to obtain a license, provide standards of operation for feedlots, outline the powers and duties of the Water Quality Division, and refer to the authority to suspend or revoke licenses (ALIS Online). License fees collected are paid to ADEQ and then remitted by ADEQ to the state treasurer and deposited in the general fund (ARS 3-1453). The specific language of statutes 3-1451 through 3-1456 can be found at www.azleg.state.az.us/ars/3/title3.htm.

ARS 49-247 (Best Management Practices for Regulated Agricultural Activities) and ARS 49-248 (Agricultural Best Management Practices Advisory Committees) refer to Arizona's agricultural general permits. ARS 49-247 describes in detail the adoption, terms and conditions, economic requirements, and use of agricultural best management practices. ARS 49-248 describes how an advisory committee will be used to develop and recommend best management practices for applying nitrogen fertilizer and for CAFOs. Specific language from these statutes can be found at www.azleg.state.az.us/ars/49/title49.htm.

Ground water contamination is addressed by Arizona's Ground Water Protection Act. Air regulations are applied according to the Federal Clean Air Act. Wetlands are protected by flood control district/Natural Resources Conservation Service (NRCS) general guidelines (NASDA, 1997).

Arizona has agricultural general permits for nitrogen fertilizers (A.C.C. R18-9-202) and CAFOs (A.C.C. R18-9-203). Under A.C.C. R-18-9-203, anyone who engages in CAFOs is issued an agricultural general permit. Any person who operates a CAFO facility pursuant to an agricultural general permit must comply with all of the following (Secretary of State, n.d.):

- Harvest, stockpile, and dispose of animal manure from CAFOs to minimize discharge of nitrogen pollutants by leaching and runoff.

- Control and dispose of nitrogen-contaminated water resulting from activities associated with a CAFO, up to a 25-year, 24-hour storm event equivalent to minimize the nitrogen pollutant discharge.
- Close facilities in a manner that minimizes the discharge of nitrogen pollutants.

Specific language from Title 18 can be found at www.sosaz.com/public_services/.

4.0 Types of Permits

NPDES

Arizona is not authorized to issue NPDES permits (USEPA, 2000); rather, EPA Region 9 has a general NPDES permit for CAFOs. The existing general permit has expired, but it still applies to the region's permit holders. ADEQ and EPA worked together to draft a new general NPDES CAFO permit, which was available for public comment through November 20, 2000 (USEPA, 2000). This draft permit will also include a requirement for all CAFOs to develop comprehensive nutrient management plans (CNMPs) by the end of 2003 if certain conditions are met (USEPA, 2000).

Other

All Arizona CAFOs are required to seek coverage under Arizona's agricultural general permit, or the statewide CAFO permit. Some CAFOs are permitted under Arizona's ground water program. The application of liquid wastes requires extensive permits. [These permits were not identified.] Beef feedlots facilities must obtain a license from the Department of Agriculture. Beef feedlot licenses require owners and operators to provide reasonable methods of disposal of animal waste (3 ARS 1452).

5.0 Permit Coverage

Facilities that meet the federal animal unit threshold must obtain coverage under the federal CAFO general permit. Regardless of size, those facilities that are significant pollution sources are treated as CAFOs at the federal level. The state issues agricultural general permits to all persons who operate CAFOs. Aquifer protection permits are required if owners or operators of facilities discharge pollutants, such that they may reach an aquifer. The threshold for obtaining a beef cattle operators license is 500 head of cattle.

6.0 Permit Conditions

Approvals

A site appraisal by NRCS is required before the development of waste structures.

Lagoon Design Specifications

Facilities are not required to follow specific design standards unless a violation occurs. Although there are no stipulations on lagoon seepage, the storage capacity of waste structures must conform to NRCS standards. NRCS provides technical assistance to farmers (NASDA, 1997).

Discharge Rules

Nondelegated states must follow the federal effluent limit – no discharge except during a 25-year, 24-hour storm (ADEQ, 2000b).

Waste Management Plans

Waste management plans are not required under the general permit.

Separation Distances

Local zoning determines the separation distance between waste structures and dwellings or property lines. Animal waste structures must be at least 100 feet away from water wells. The required distance from the bottom of a waste structure to the ground water surface varies (NASDA, 1997).

Land Application Requirements

Agronomic standards are in place for land application of solid manure.

Other Requirements

Facilities must be closed in a manner that minimizes the discharge of nitrogen pollutants.

7.0 Enforcement Information***General Enforcement Information***

EPA and ADEQ send inspectors to CAFOs to determine whether they are in compliance with NPDES requirements and, if applicable, the conditions imposed under an NPDES permit. EPA may issue warning letters or notices of violation; administrative orders that require correction of violations; and, depending on the violation, administrative penalties that assess monetary fines. The laws also allow EPA to pursue civil and criminal actions for persons found willfully violating NPDES requirements and endangering the health and welfare of the environment or the public (USEPA, 2000)

General Inspection Information

Violators are identified through inspections and complaints. Inspections are prompted by complaints because routine on-site inspections are not required (NASDA, 1997; USEPA, 1998).

ADEQ has established a CAFO inspection program to curtail existing off-site discharges of runoff or wastewater and to evaluate individual livestock facilities for potential to discharge water contaminated by animal waste. Recommendations and violations are written to facilities to correct deficiencies in waste management practices, waste handling devices, and waste handling structures. At this time, all livestock operations (dairy, swine, poultry, horses, ostrich, etc.) with approximately 300 animal units or more, are to be inspected by ADEQ. Inspections focus on effective manure and wastewater management (ADEQ, August 2000a).

ADEQ employees have the authority to inspect livestock facilities through ARS 49-203 B.1.

ADEQ performs livestock facility inspections to evaluate livestock facility compliance with Arizona Administrative Code (A.C.C.) R18-9-202 (Agricultural General Permits: Nitrogen Fertilizers), A.C.C. R18-9-203 (Agricultural General Permits: Concentrated Animal Feeding Operations), A.C.C. R18-11-108 (Narrative Water Quality Standards), and A.C.C. R18-11-109 (Numeric Water Quality Standards).

8.0 Voluntary Programs

ADEQ's Water Quality Division engages in extensive outreach and educational activities to assist CAFO operators.

The Non-point Source Discharge program uses a combination of regulatory controls and cooperatively based implementation to address CAFO wastes. The cooperation of community-based watershed advisory groups is vital to the state's nonpoint source program (ADEQ 1997).

NRCS and Arizona universities provide farmers with environmental management seminars, BMP seminars, and technical assistance. Technical and financial assistance is also available to CAFOs through the Agua Fria–New River and Buckeye–Roosevelt Natural Resource Conservation Districts. Finally, one EPA section 319 grant was used for an AFO-related activity in Arizona (USEPA, 1998).

9.0 Additional State-Specific Information

Cooperative Extension Service

The University of Arizona Cooperative Extension provides a link between the university and Arizona residents. The Animal Waste Management Program, a program sponsored by the extension service, provides a centralized source for information on animal waste and wastewater management. The program focuses on dairy and feedlot waste management, providing users with fact sheets, inspection information, BMPs, worksheets on manure use/management and collection/storage of animal wastes and wastewater, and a number of other useful links. More information about the extension service and the waste management program can be found at <http://ag.arizona.edu/extension/> and <http://ag.arizona.edu/animalwaste/>.

Comprehensive Nutrient Management Plan (CNMP) Certification

Arizona does not have a CNMP preparer certification program. EPA Region 9 and ADEQ are developing a new NPDES CAFO general permit that will require CNMPs (USEPA 2000). The permits should be completed in spring 2000.

10.0 References

ALIS Online. n.d. *Arizona Revised Statutes*. <www.azleg.state.az.us/ars/ars.htm>. Accessed August 2000.

ADEQ. August 2000a. *Environmental Programs, Water Quality Compliance Section: Concentrated Animal Feeding Operations*. Arizona Department of Environmental Quality. <www.adeq.state.az.us/environ/water/compliance/index.html>. Accessed August 2000.

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Arkansas's CAFO Program

1.0 Background

Based upon information provided to EPA by USDA it is estimated that there are 1,481 AFOs with from 300 to 1,000 animal units and 597 AFOs with more than 1,000 animal units in Arkansas. These are primarily in the broiler sector (USDA, 1999; USDA, 2000).

Pursuant to Section 2 of Act 1219 of 1997, as of March 31, 1999, the Arkansas Department of Pollution Control and Ecology became the Arkansas Department of Environmental Quality (ADEQ). Regulation 5 and all other regulations of the Arkansas Pollution Control and Ecology Commission remain in full force (ADEQ, 2000).

The Department now known as ADEQ has been issuing permits for animal feeding operations since 1970 under the authorities contained in the Arkansas Water and Air Pollution Control Act. Most animal feeding operations in Arkansas are relatively small operations, although the number of large livestock and poultry facilities in the state has been increasing (Quinn, 1993).

2.0 Lead Regulatory Agency

ADEQ has regulatory authority over environmental aspects of livestock feeding operations and is authorized by EPA to administer the NPDES program. The NPDES program information is located at www.adeq.state.ar.us/water/npdesbr.htm.

The Arkansas Soil and Water Conservation Commission is responsible for developing and implementing the State's Nonpoint Source Pollution Management Program. This program is a cooperative effort of many local, state, and federal agencies. Efforts are directed toward both restoring impaired waters through the watershed program and protecting all of the state's waters through categorical programs (ASWCC, 2000).

3.0 State Regulations Regarding AFOs/CAFOs

Pursuant to the Arkansas Water and Air Pollution Control Act (Act 472), ADEQ adopted Regulation No. 5 - Liquid Animal Waste Management Systems (the "Regulation"). The Regulation is located at www.adeq.state.ar.us/regs/pdfs/reg05.pdf.

The purpose of Regulation No. 5 is to establish the minimum qualifications, standards, and procedures for the issuance of permits for confined animal operations using liquid animal waste management systems within the state and for the issuance of permits for land application sites within the state. The regulation provides management, operational, and maintenance procedures necessary to prevent point source pollution and minimize nonpoint source pollution to the waters of the state and control to the degree practicable the generation of offensive odors by regulated confined animal operations. The siting and separation requirements set forth in the regulation are intended to protect water quality, to protect public health, and to abate odor. To minimize odor, the Commission's policy is to encourage permittees to adopt a good neighbor policy and consider the use of chemical or biological additives or other best management practices in the operation of liquid animal waste management systems.

Confined animal operations that use a dry waste management system are not required to obtain a permit from ADEQ but are subject to enforcement actions for improper waste handling, storage,

or disposal.

4.0 Types of Permits

NPDES

ADEQ issues three types of NPDES permits for CAFOs (ADEQ, 2000).

- The NPDES general permit is a federal permit required for all *concentrated* animal feeding operations (CAFOs). A CAFO is an animal feeding operation that exceeds 1,000 animal units as defined in 40 CFR Part 122, Appendix B.
- A state general permit is available for facilities that do not satisfy the criteria for CAFO classification but still wish to be covered by a general permit. The state general permit contains conditions and requirements similar to those contained in the NPDES general permit but is issued under state authority.
- An individual state permit is issued for facilities that do not satisfy the criteria for CAFO classification and do not wish to be covered by the state general permit. Although, an individual state permit contains conditions and requirements specific to each facility. In most cases, an individual state permit has conditions and requirements very similar to those of a state general permit.

Other

Under the authority of the Arkansas Water and Air Pollution Control Act (Act 472 of 1949, as amended), the State Permits Branch also issues permits for land application of beneficial industrial process wastes. To be considered "beneficial," land application of the waste must provide some sort of agronomic improvement to the application site, such as crop nutrients, soil conditioning, or crop irrigation (ADEQ, 2000).

The State Permits Branch, in cooperation with the Arkansas Department of Health, issues permits to facilities that use subsurface wastewater disposal such as septic tanks and leach fields. Regulatory jurisdiction of a subsurface wastewater disposal system depends on the type and volume of waste (ADEQ, 2000).

Subsurface disposal of non-domestic wastewater (regardless of flow rate) requires a permit from ADEQ. Non-domestic wastewater is any wastewater that is commercial, industrial, or agricultural in origin, excluding food establishments. The most common types of facilities permitted for subsurface disposal of non-domestic wastewater are car and truck washes, slaughterhouses and laundromats (ADEQ, 2000).

5.0 Permit Coverage

APCEC's Regulation No. 5 requires all confined animal operations, regardless of size, that use a liquid waste management system in Arkansas to obtain a permit from the Department. Confined animal operations that use a dry waste management system are not required to obtain a permit from the Department but are subject to enforcement actions for improper waste handling, storage, or disposal (APCEC, 2000).

Regulation No. 5 provisions are applicable to the operation of hog, poultry, or dairy farms or other confined animal operations using liquid animal waste management systems.

6.0 Permit Conditions

Approvals

No confined animal operation using a liquid waste disposal system may be constructed or operated unless the owner has first obtained a permit from the Department.

No liquid animal waste management system may be constructed, modified, or placed into operation unless in accordance with final design plans and specifications approved by the Department.

The provisions of Regulation No. 5 require all confined animal operations to be constructed in accordance with plans and specifications approved by ADEQ. Following completion of construction and prior to operation commencing at the facility, certification that the facility was constructed in accordance with approved plans and specifications must be submitted to ADEQ. This certification must be prepared by USDA-NRCS, the University of Arkansas Cooperative Extension Service, an Arkansas Soil and Water Conservation District water quality technician, or a Professional Engineer registered in the state of Arkansas. Authorization to operate the facility will not be issued until the certification is received by the Department.

Lagoon Design and Specifications

Designs and waste management plans must be in accordance with Regulation No. 5 and the following NRCS technical publications:

- Field Office Technical Guide
- Animal Waste Management Field Handbook

The subsurface investigation for earthen holding ponds, and treatment lagoons, suitability and liner requirements may consist of auger holes, dozer pits, or backhoe pits that should extend to at least 2 feet below the planned bottom of the excavation. In those situations where this depth is not practical in the initial on-site subsurface investigation, the applicant must provide additional subsurface investigation documentation to ADEQ.

Settling basins and holding ponds must contain all process-generated wastewater and contaminated runoff from an animal feeding operation. The freeboard capacity of a holding pond must be maintained at not less than 12 inches plus the 25-year, 24-hour storm event. Holding ponds must be outside the 100-year floodplain unless the facility is protected from damage that might occur during a flood (ADPCE, 1993).

Discharge Rules

The operator of a confined animal operation constructed and operated as authorized by permit in accordance with the provisions of Regulation No. 5 must not allow or cause a point source discharge from any part of the liquid animal waste management system.

All general and individual permits are considered "no discharge" permits and prohibit the direct

discharge of any waste to waters of the state, including periods of precipitation greater than the 25-year, 24-hour storm event.

Waste Management Plans

The waste management plan must be developed in accordance with the USDA-NRCS Field Office Technical Guide and must address the timing of land application of wastes with respect to the nutrient uptake cycle of the vegetation found on the land application site(s). To the extent practicable, it must also include measures to minimize off-site obnoxious and offensive odors.

All permitted facilities must have a waste management plan for the farm and a site management plan for each land application site prepared by a Professional Engineer registered in the state of Arkansas, the USDA-NRCS, the University of Arkansas Cooperative Extension Service, or a water quality technician of the Arkansas Soil and Water Conservation District and approved by the Department. The Department must require proof of land ownership or of contractual agreements for use of the land as a land application site.

Waste management plans submitted in accordance with Regulation No. 5 may include composting as an alternative to land application of liquid waste. Any such plans may provide for composting at a permitted composting facility. If no such facility is referenced in the plan, it must include sufficient detail for a determination by the Department that point or nonpoint source pollution to the waters of the state will not result from the use of this alternative.

Separation Distances

Confinement buildings, settling basins, holding ponds, and other liquid animal waste containment structures may not be constructed within 1,320 feet of the nearest existing occupied dwelling for confined animal operations in excess of the following numbers of animals: 600 beef cattle, 430 dairy cows, 1,500 finishing hogs, 600 sows, 6,000 nursery pigs, 33,000 turkeys, or 130,000 chickens. A buffer distance of 500 feet applies to all other facilities. These buffer distances do not apply if the existing dwelling is owned by owners or operators of the liquid animal waste management system or if the adjoining property owner consents in writing. Confined animal operations existing as of the effective date of the regulation and proposing to construct a liquid animal waste containment structure to reduce waste/wastewater run-off to waters of the state may be considered exempt from these buffer distances by the Director. These buffer distances do not apply to confinement buildings, settling basins, holding ponds, or other liquid animal waste containment structures existing as of the effective date of the regulation, nor do they apply to existing structures when a liquid animal waste permit modification is required due to a change in ownership.

Application of waste/wastewater must not be made within 100 feet of streams, including intermittent streams, ponds, lakes, springs, sinkholes, rock outcrops, wells, and water supplies; or within 300 feet of extraordinary resource waters as defined by the Department's Regulation No. 2. Buffer distances for streams, ponds, and lakes must be measured from the ordinary high water mark. The Department may require additional buffer distances deemed necessary to protect the waters of the state.

Application of waste/wastewater may not be made within 50 feet of property lines or 500 feet of neighboring occupied buildings existing as of the date of the permit. The restrictions regarding property lines or neighboring occupied buildings do not apply if the adjoining property is also

approved as a land application site under a permit issued by the Department or if the adjoining property owner consents in writing.

No animals from the confined facility are allowed contact with flowing surface waters (ADPCE, 1993).

Dead animals must not be disposed of within 50 feet of rock outcrops, 100 feet of property lines, 300 feet of waters of the state (including ground water conveyances and wells), 100 feet of intermittent streams, and 500 feet of neighboring occupied dwellings.

Land Application Requirements

A Waste Management Plan approved by an Arkansas registered Professional Engineer must accompany all applications for waste storage/land application permits. The Waste Management Plan must contain waste analyses and documentation of the potential agronomic benefit for any waste to be land applied. Additional requirements are listed in the permit application (ADEQ, 2000).

- Waste/wastewater must be evenly distributed over application sites at the rates specified in site management plans.
- Land application of waste/wastewater must not be undertaken when soil is saturated, frozen, or covered with ice or snow, or when significant precipitation is reasonably anticipated in the next 24 hours.
- Waste/wastewater may not be applied on slopes with a grade of more than 15 percent or in any manner that will allow waste to enter waters of the state or to run onto adjacent property without the written consent of the affected adjacent property owner.
- Application of waste/wastewater may not be made in areas where the land application of waste/wastewater is prohibited by Arkansas Department of Health regulations for the protection of public water supplies.
- Records must be kept of all waste/wastewater applied. These records must be kept in sufficient detail to determine the application rate. A log must be kept of all land-applied waste/wastewater. The log should include date, weight and/or volume, destination, and acreage over which the load was spread. All records and logs must be kept at the facility and provided to the Department upon request.
- A representative sample of the waste/wastewater to be land applied must be collected periodically, at least once each year, and analyzed for the following parameters: pH, total nitrogen, ammonium, potassium, phosphorous, and percent solids. The Department may require more frequent testing deemed necessary to protect the waters of the state.
- The soils of each field where liquid animal waste has been land applied must be sampled and analyzed annually prior to the application of wastes for the following parameters: pH, potassium, phosphorous, and nitrates.
- Methods and timing of sampling and analysis described in Section 5.407 must be in accordance with University of Arkansas Cooperative Extension Service guidelines.

- Annual reports for the previous calendar year must be submitted to the Department before May 30 of each year and must include the following: waste/wastewater analyses conducted under paragraph 5.407(B); soil analyses conducted under paragraph 5.407(C); locations, volumes, and nitrogen application rates for the previous year; methods of application; and types of crops grown on each land application site. Reports must be submitted on forms provided by the Department.

A separate permit may be issued for a land application site if the owner submits an application that includes a site management plan for the land application site and a plan detailing nutrient application rates; the timing of waste application with respect to the nutrient uptake cycle of the vegetation found on the land application site(s); and waste storage and distribution method(s) prepared in accordance with the requirements of the regulation. The applicant for such a permit must notify the Department of any contractual agreement for the use of the land as a land application site by submitting a copy of the agreement. Records of waste/wastewater application must be kept as specified in Section 5.407 and must include information regarding the source of the waste, including location and permit number if applicable. Sampling, analysis, and annual reporting as specified in Section 5.407 are required.

7.0 Enforcement Information

Arkansas Department of Environmental Quality has an *Enforcement Tracking List* to record reported violations and note what corrective/punitive actions were taken against the animal feeding operation. Civil and/or criminal penalties can be assessed against any person who violates any provision of the Arkansas Water and Air Pollution Control Act. Furthermore, ADEQ can recover payment to the Arkansas Game and Fish Commission for natural resource damages (USEPA, 1993).

Criminal penalties, including imprisonment, can be imposed for up to one year and/or a fine of \$25,000 can be imposed on anyone who violates any provision of the Arkansas Water and Air Pollution Control Act. Animal feeding operations that are out of compliance with Arkansas rules and regulations may not be allowed to seek coverage under the state's general NPDES permit and could have to file for an individual permit.

Inspection Program

Inspections typically occur every two years for facilities with liquid waste management system permits (A. Senkayi, 1997). The permittee must inspect waste control structures four times a year. Under the NPDES general permit Arkansas farmers have to maintain records of inspections completed by the permittee (USEPA, 1993).

8.0 Voluntary Programs

No information was found in publically available sources.

9.0 Additional State-Specific Information

Cooperative Extension Service

Information regarding the University of Arkansas's Division of Agriculture, Cooperative

Extension Service, is available at www.uaex.edu.

Comprehensive Nutrient Management Plan (CNMP) Certification

A certified waste management plan is required for all liquid waste disposal permits. This plan must be certified by officials established by the state and approved by ADEQ (Arkansas Pollution Control and Ecology Commission, Regulation No. 5, Liquid Animal Waste Management Systems). The following professionals are permitted to certify waste management plans in Arkansas:

- Arkansas registered Professional Engineer
- Certified personnel from USDA-NRCS
- University of Arkansas Cooperative Extension Service
- Water quality technician of the Arkansas Soil and Water Conservation District

Arkansas's Liquid Animal Waste Management Systems Regulation requires applicants for permits to provide certification of satisfactory completion of formal education or training in the areas of waste management and odor control. CAFO operators with a permit or applying for a permit must meet certification requirements.

The operator training course content was developed March 23, 2000, under the supervision of the University of Arkansas Cooperative Extension Service. Proof of certification must be provided to ADEQ. Operator certification is required for a liquid waste disposal system permit. The certification program includes a minimum of 4 hours of individualized training and education in areas of waste management and odor control. After one year, operators must complete annual refresher training.

Case Studies/Innovative Programs

Large swine and poultry facilities that are under contract with major processing companies usually have permits because the processing companies police their own waste control systems to ensure compliance with environmental regulations. Large contractors prefer that contracted swine and poultry facilities have liquid waste management system permits and even specify a permit as a condition of the contract.

ADEQ reports unpermitted facilities and violators to the general contractors to enlist their help in getting CAFOs to operate according to Arkansas's regulations.

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California's CAFO Program

1.0 Background

Based upon information provided to EPA by USDA it is estimated that there are 1,090 AFOs with from 300 to 1,000 animal units and 1,030 AFOs with more than 1,000 animal units in California. These are primarily in the dairy sector (USDA, 1999; USDA, 2000).

The state of California has indicated that surface water and ground water are adversely affected by some dairy operations. The 1996 California State Water Board's Section 303(d) list of waterbodies impaired by dairies includes Estero Americano, Estero de San Antonia, Laguna de Santa Rosa, Stemple Creek, Tomales Bay, Lone Tree Creek, Temple Cree, Chino Creek, the Prado area of Mill Creek, and the Santa Ana River. The State Board named five of these waters as highest priority for the development of Total Maximum Daily Load (TMDLs) within the next 2 years. Additionally, California's 305(b) report lists 22 ground water basins covering more than 10,477 square miles as impaired by dairies (USEPA, 1998).

2.0 Lead Regulatory Agency

The State Water Resources Control Board (SWRCB) and Regional Water Quality Control Boards (RWQCBs) regulate the discharge of animal wastes into state waters (California Permit Handbook, 1997). California has nine RWQCBs for the different state regions, which have the authority under state law to protect ground water and surface water from animal waste. More information about SWRCB and RWQCBs can be found at www.swrcb.ca.gov and www.swrcb.ca.gov/rwqcb/index.html, respectively.

3.0 State Regulations Regarding AFOs/CAFOs

Regulations that apply to animal feedlots are found in Title 14, Title 22, and Title 23 of the California Code of Regulations (California Permit Handbook, 1997). In 1998 California issued statewide minimum standards for discharges of animal waste at CAFOs (California Code of Regulations, Title 27, §22560 *et seq.*) Additional waste management rules are found under California Code of Regulations Article 8 (Agricultural Solid Waste Management Standards). California has no wetland or air quality regulations that address CAFOs (NASDA, 1997).

4.0 Types of Permits

NPDES

California does not issue individual NPDES permits to CAFOs (Oda, 1997). To discharge to surface waters in California, animal feedlot operators must apply to a Regional Water Resource Control Board (RWQCB) for coverage under the CAFO general NPDES permit. Other NPDES permits for storm water runoff discharges may be required prior to construction of CAFOs (California Permit Handbook, 1997).

California is considering the use of a state NPDES general permit. Santa Ana Regional Board already covers most of its 340 dairy operations under a general NPDES permit. The general permit used in Santa Ana prescribes waste discharge requirements for animal confinement facilities and permits the discharge of storm flows from facilities during chronic, cumulative, and catastrophic storm events and/or rainfall that totals more than the 25-year, 24-hour storm event

(USEPA, 1998).

Other

CAFO operators may be required to obtain a Waste Discharge Requirements Permit (WDR) in accordance with minimum statewide standards prescribed in the California Code Regulations Title 27 § 22560 et seq. (1998) from an RWQCB in the project area. The permit applies to any facility that discharges or proposes to discharge wastes that may affect ground water or that are released in a diffuse manner. Dischargers required to obtain a WRP must provide general information on and any material changes to the following:

- Average daily volume of facility wastewater and volume or weight of manure.
- Total animal population at the facility, and types of animals.
- Location and size of use or disposal fields and retention ponds, including animal capacity.
- Animal capacity of the facility.

In addition, animals must be prevented from entering any surface waterbodies within the confined area of the CAFO (NASDA, 1999). The state and counties regulate dairy waste by requiring dairies to obtain a construction permit.

5.0 Permit Coverage

The owner or operator of any facility that proposes to discharge to surface waters must obtain an NPDES permit. The application must be submitted 180 days before the start of the proposed activity. The owner or operator of any facility that proposes to discharge wastes in such a way that ground water may be affected must obtain a Waste Discharge Requirements Permit. The application is due 120 days before the start of the activity (California Permit Handbook, 1997).

6.0 Permit Conditions

Approvals

The state appraises waste structure sites before development, and farmers are required to follow specific design standards (NASDA, 1997).

Lagoon Design and Specifications

Lagoons must be lined or underlined with soils containing ≥ 10 percent clay and ≤ 10 percent gravel. An artificial material of equivalent permeability is acceptable (NASDA, 1997).

Discharge Rules

Existing waste structures must contain wastes during a 25-year, 24-hour storm event. Retention ponds must be able to handle 20-year peak streamflows. New structures are required to retain wastes during 100-year storms (NASDA, 1997).

Waste Management Plans

There are no specific regulatory requirements for manure management plans. However, in accordance with California Code of Regulations Title 14 § 17823.1 (1998), manure management

practices must prevent the creation of excessive vectors such as domestic flies, mosquitos, cockroaches, and rodents, or other adverse public health/well-being conditions. Alternatively, frequent manure removal may be used provided such operations do not result in the creation of adverse public health/well-being conditions (NASDA, 1999).

Separation Distances

The separation distance between waste structures and property lines is controlled by local zoning. County standards determine separation distance from dwellings and how close animal waste structures can come to ground water. The state requires water wells to be 50 to 100 feet from any animal enclosure and 100 to 150 feet from wastewater lagoons 8 feet or greater [width or depth not specified] (NASDA, 1997).

Land Application Requirements

Land application of animal wastes is limited to "reasonable rates" that do not result in surface runoff (NASDA, 1997) and minimize percolation to ground water (NASDA, 1999).

Other Requirements

The California Integrated Waste Management Board requires that excessive odor, dust, and feathers must be controlled to protect public health and well-being. Animal carcasses from CAFOs must be collected, stored, and removed in a manner approved by the state enforcement agency.

7.0 Enforcement Information

Routine site inspections are not required by the state. Inspections, prompted by complaints, are used to identify violators (NASDA, 1997). The enforcement agency may also inspect agricultural operations to enforce public health and well-being standards. The need and frequency of these inspections are based on complaints, the size of the facility, the potential of the facility to create excessive vectors, and the proximity to residential properties.

California conducts ground and surface water inspections by separating CAFO inspections into three geographical areas: Marin/Sonoma, Central Valley, and Chino Basin. Inspectors focus first on areas where the state has not been active and where there is a high concentration of CAFO facilities. The inspectors conducted 200 federal inspections of dairy sites in Stanislaus, San Joaquin, and Merced counties in winter/spring 1998 (USEPA, 1998).

The Multi-Agency Dairy Pollution Task Force also sends teams of inspectors to complete inspections, prepare and evaluate inspection reports, and evaluate sampling data generated to determine which agency would best address violations (USEPA, 1998).

After an inspection, EPA may take a range of actions. The Agency may send warning letters describing what conditions may potentially lead to a violation. EPA may also send a Finding of Violation and Order informing facilities of their violations and requiring correction of the violations. Failure to comply with a compliance order may result in penalties of up to \$27,500 per day of violation. In addition, EPA may seek an administrative penalty and assess a penalty of up to \$11,000 per day of violation, with a maximum of \$137,500. Finally, EPA may also begin a civil suit, asking a court to require a facility to take the appropriate action to cease or

remedy the violation and to impose a penalty. More information about inspections can be found at www.epa.gov/region09/cross_pr/animalwaste/california.html.

8.0 Voluntary Programs

California EPA created "One-Stop" Permit Assistance Centers throughout the state that provide regulatory compliance assistance and on-site permit expertise to businesses needing guidance through the state and local regulatory systems. Implementation of a Water Quality Assurance Plan is another voluntary program that addresses CAFO-related issues (NASDA, 1997).

More than \$450,000 in section 319 grants has been awarded since 1995 toward AFO assessment and education. These funds have been used toward projects in Marin-Sonoma. The Bay Area Resource Conservation District (RCD) received a section 319 grant to assess and address solutions for problems related to horse operations (USEPA, 1998).

Within the state, the California Dairy Quality Assurance Committee works proactively on animal and food safety issues. The Committee members include USDA, CDFA, Western United Dairymen, Milk Producers Council, California Dairy Campaign, Farm Bureau Dairy Group, and producers and processors (USEPA, 1998).

The Santa Ana River Watershed Group is a multiple-stakeholder group composed of various representatives, including federal and state agencies, environmental groups, and the dairy industry. The group developed a strategy to reduce manure accumulation in the Chino Basin over the long term and to provide short-term drainage controls to minimize the amount of dairy waste reaching the Santa Ana River and the region's ground water. The strategy focused on developing new composting and storage facilities in San Joaquin Valley, maximizing the existing composting capacity of the preserve, and developing new markets for manure and composted products. Additionally, the strategy addressed plans for how dairy operations can comply with state and federal water quality requirements and the requirements of the National Animal Feeding Operations Strategy. It also developed an approach for relocating dairy farms to other areas and identified options for conserving open space and wildlife in the Santa Ana River watershed (USEPA, 2000c).

The California Dairy Quality Assurance Program Partnership (CDQAP) is a partnership with California federal and state agencies, academia, and the dairy industry created to promote quality dairy products and a healthy environment through improved farm practices. The program's objective is to assist California dairy producers in meeting all federal, state, regional, and local regulations relating to manure and nutrient management and to develop an environmental stewardship education program. The CDQAP program is entirely voluntary. The core components of this program are continuing educational programs for producers, creating Environmental Stewardship Farm Management Plans specific to each dairy, and on-site evaluation by a third party. Producers completing the education program become "certified"; however, this certification carries no regulatory significance other than to inform local, regional, state, and federal agencies of the producer's effort toward meeting compliance. The exact policies and procedures by which a producer will become certified will be determined following a pilot program to be coordinated by the California Department of Food and Agriculture. All partners in this agreement will cooperate in the development of training materials designed to assist dairy producers with coming into compliance with all federal state, regional, and local environmental rules and regulations (USEPA, 2000b).

9.0 Additional State-Specific Information

Cooperative Extension Service

Agricultural Extension Programs provide additional support to California farmers. University of California, Davis, Cooperative Extension has farm advisors with extensive animal waste issue expertise. Also, the Extension's Livestock Waste Management Specialist teaches a well-attended environmental stewardship short course for California dairy operators (USEPA, 1998).

University of California Cooperative Extension provides coordination and technical support for the regular meetings of the Sonoma/Marin Animal Waste Committee. The Committee is an informal group of agriculturalists, federal and state agency staff, consultants, and Farm Bureau members and staff that discusses waste management issues and solutions and assists dairy operators with state and federal water quality control regulations.

Due to the size of California, the University of California has several cooperative extensions within the state. UC Cooperative Extensions are in the North Coast and Mountain Region (<http://ncmr.ucdavis.edu/>), the Central Valley Region (<http://cvr.ucdavis.edu/>), and the Central Coast and South Region (<http://ccsr.ucdavis.edu/>).

Comprehensive Nutrient Management Plan (CNMP) Certification

California does not have a comprehensive nutrient management plan (CNMP) preparer certification program. Nutrient and Irrigation Water Management Plans (NIWMPs), however, are required for CAFOs in the Central Valley Region of California if a facility meets general waste discharge requirements issued by the Regional Water Quality Control Board. NIWMPs are recommended by the Regional Water Quality Control Board for all CAFOs. NIWMPs can be prepared by any person who understands crop nutrient and water requirements (CAEPA, 2000).

Other State Agency Involvement

California's Integrated Waste Management Board has set standards to safeguard public health and well-being that may have an impact on animal waste management at CAFOs.

Central Valley area leads the Multi-Agency Dairy Task Force. The task force targets incidents of dairy discharges to surface water in Sacramento, San Joaquin, Stanislaus and Merced counties. During winter/spring 1998, the Task Force investigated surface water pollution caused by discharges of dairy wastewater in the Central Valley. Participating agencies include California Fish and Game, Central Valley Regional Water Quality Control Board, Department of Toxic Substances Control, San Joaquin County D.A., U.S. Fish and Wildlife, U.S. Attorney's Office, Office of the Attorney General, CA Department of Food and AG, Stanislaus County D.A., and USEPA Region 9.

Other Information

A study of the Hilmar area conducted by the RWQCB may serve as an example of the extent of ground water contamination by nitrate in California's Merced County. The study indicates that within a 36-square-mile area, about 60 percent of the 69 wells sampled exceed the state MCL. These high nitrate levels are believed to be caused primarily by dairy waste (USEPA, 1998).

Sonoma/Marin dairy operators use "range plans" to ensure compliance with water quality control regulations (USEPA, 1998). A local processor, Clover-Stornetta, offers incentives to dairies with approved range plans, including a higher price for their milk and marketing of the milk as an "environmentally conscious product." The product sells well.

In addition, CWA section 319 grants are funding a demonstration project for advanced pond systems, as well as a collaborative approach to addressing horse operation waste management issues in the Bay area (USEPA, 1998).

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Colorado's CAFO Program

1.0 Background

Colorado is a significant beef-producing state, generally ranking fourth in the nation for the number of beef cattle on feed. Colorado Agricultural Statistics indicates approximately 2,200 animal feeding operations in Colorado, including dairy and swine facilities and facilities with animals on feed (CODPHE, 2000a). Based on information provided to EPA by the U.S. Department of Agriculture (USDA), it is estimated that there are 170 AFOs with 300 to 1,000 animal units and 210 AFOs with more than 1,000 animal units in Colorado. These are primarily in the beef sector (USDA, 1999; USDA, 2000).

On November 3, 1998, Colorado approved Amendment 14 to the air quality and water quality statutes that required the Air Quality Control Commission and Water Quality Control Commission to develop regulations for housed commercial swine feeding operations. Amendment 14 added a new section, section 25-8-501.1, to the Colorado Water Quality Control Act and amended section 25-8-504. These provisions established a new requirement that an individual discharge permit be obtained by any person who operates, constructs, or expands a "housed commercial swine feeding operation." The Commission also adopted revisions to the Colorado Discharge Permit System Regulations to implement these new requirements. Corresponding revisions were also adopted for the Confined Animal Feeding Operations Control Regulation, Regulation No. 81 (5 CCR 1002-81), to avoid regulatory overlap. Amendment 14 required the air commission to have regulations promulgated by March 1, 1999, and the water commission to have regulations promulgated by March 31, 1999, to implement the statutory amendments. The Confined Animal Feeding Operations Control Regulation, Regulation No. 81, was amended on March 9, 1999, and became effective on April 30, 1999. Affected hog operations were to be in compliance by July 1, 1999 (CODPHE, 2000b).

2.0 Lead Regulatory Agency

The Colorado Department of Public Health and Environment (CODPHE), Water Quality Control Division, administers the Colorado Discharge Permit System Regulations. More information about the Department and the Division can be found at www.cdphe.state.co.us/cdphehom.asp and www.cdphe.state.co.us/wq/wqhom.asp, respectively.

3.0 State Regulations Regarding AFOs/CAFOs

A description of Regulation No. 81, Confined Animal Feeding Operations Control Regulation (5 CCR 1002-81), is located at www.cdphe.state.co.us/ap/81reg.pdf. In addition, housed commercial swine feeding operations must comply with the relevant sections of Regulation No. 61. These requirements can be found at www.cdphe.state.co.us/ap/wq14mar.pdf.

4.0 Types of Permits

The Commission intends Regulation No. 81 to be a self-implementing control regulation that requires no permit as a condition for operation of a confined animal feeding facility, whether concentrated or not. The Commission has found, however, that planning is necessary to ensure that CAFOs meet the regulation's requirements. To better monitor compliance with this self-implementing regulation and to be more responsive to public inquiries, the Division needs to be informed of the existence and operation of CAFOs. Therefore, the adopted rule requires new,

reactivated, reconstructed, and expanded CAFOs, as well as existing operations that are in significant noncompliance, to submit to the Division a Manure and Process Wastewater Management Plan (CODPHE, 2000c).

NPDES

Colorado is authorized to administer the NPDES permit program, although they do not require any permit for animal or agricultural waste on farms and ranches except as may be required by the federal act or regulations or by section 25-8-501.1, C.R.S., of the state regulations which provides that permits must be required for housed commercial swine feeding operations. The provisions of any permit that is so required for animal or agricultural waste on farms and ranches that are not housed commercial swine feeding operations are not any more stringent than, and do not contain any condition for monitoring or reporting in excess of, the minimum required by the federal act or regulations (CODPHE, 2000b).

Other

New housed commercial swine feeding operations must include the following with their permit application (CODPHE, 2000b):

- Calculations that identify the maximum proposed animal capacity.
- Construction plan.
- Operations plan.
- Swine waste management plan, except for non-land-application facilities.
- Monitoring plan.
- Financial assurance plan (financial assurances for the final closure of the housed commercial swine feeding operation and the conduct of any necessary post-closure activities, such that any contamination resulting from actions after the effective date of the regulation is remediated and future contamination is avoided).
- Documentation that the operations will meet the definition of "non-land-application facility" for non-land-application facilities.

Existing housed commercial swine feeding operations must include the following with their permit application (CODPHE, 2000b):

- Calculations that identify the maximum proposed animal capacity.
- Construction plan.
- Information regarding the existing swine waste management practices.
- Documentation that the operations will meet the definition of "non-land-application facility" for non-land-application facilities.

5.0 Permit Coverage

Colorado's CAFO Control Regulation identifies CAFOs in a manner similar to the federal definition of a CAFO, although Colorado's regulation addresses only operations with 1,000 or more animal units and adds an additional criterion for the case-by-case considerations: The animal feeding operation in a location that reasonably could be expected to adversely affect a hydrologically sensitive area would also be considered a CAFO (CODPHE, 2000a).

Two or more animal feeding operations under common ownership or management are deemed to

be a single animal feeding operation if they are adjacent or utilize a common area or system for manure disposal.

No person can operate, construct, or expand a housed commercial swine feeding operation without first having obtained an individual discharge permit from the Division (CODPHE, 2000b).

"Housed Commercial Swine Feeding Operation" means a housed swine feeding operation that is capable of housing 800,000 or more of live animal weight of swine at any one time or is deemed a commercial operation under local zoning or land use regulations. Operations will be presumed capable of housing 800,000 pounds or more of live animal weight if they have the capacity to house the following (CODPHE, 2000d):

- 11,500 weaned swine (70 pounds or less); or
- 3,020 feeder swine (more than 70 pounds, up to finish weight); or
- 2,000 breeding sows and/or boars

6.0 Permit Conditions

Approvals

CAFO operators must submit, for the Division's approval, a land application plan designed to demonstrate that land application rates will not result in exceedances of applicable water quality standards or numerical protection levels.

The Waste Water Management Plan does not require an official review or approval by the Water Quality Control Division unless a land application plan requires site-specific analyses (CODPHE, 2000c).

Lagoon Design and Specifications

CAFOs are required to adopt specific manure and wastewater retention and disposal requirements. These requirements focus on proper design, construction, and operations to ensure proper disposal of animal feedlot waste and protection of ground water and surface water. Several of these requirements are highlighted below (CODPHE, 2000c):

- Structures that retain process-generated wastewater must be lined so as not to exceed a seepage rate of 1/32 inch per day.
- Structures that retain storm water from open animal feeding operations must be constructed and maintained so as not to exceed a seepage rate of 1/4 inch per day.
- Compacted or in-situ earthen materials must consist of suitable soils and have a minimum compacted thickness of 12 inches.
- Manure and process wastewater stored in earthen storage structures (lagoons or earthen storage basins) must be removed from the structures as necessary to maintain a minimum of 2 feet of freeboard in the structure.

Discharge Rules

An operator of an existing CAFO constructed prior to April 16, 1974, and operated continuously since that time may not discharge manure, process wastewater, or storm water runoff from the facility to state waters except as the result of storms equal to or in excess of the amount resulting from a 10-year, 24-hour storm. A CAFO that changes ownership or increases its average working capacity may not discharge in excess of a 25-year 24-hour storm event (CODPHE, 2000c).

An operator of a CAFO constructed after April 16, 1974, or constructed earlier but inactive for longer than three consecutive years after that date, must design, construct, and operate control structures as necessary to retain and dispose of without discharge all manure and process wastewater produced by the facility and all storm runoff that enters the facility as the result of precipitation equal to or less than the amount resulting from a 25-year, 24-hour storm (CODPHE, 2000c).

Waste Management Plans

All new, reactivated, reconstructed or expanded, or existing CAFOs that have been determined by the Director to be in significant noncompliance with Regulation No. 81 are required to submit a manure and process wastewater management plan. The plan, at a minimum, must include the following (CODPHE, 2000c):

- Legal owner
- Local contact
- Legal description of the site
- Surface area of the site along with a drainage schematic
- Animal unit capacity
- Storm water and wastewater conveyance facilities
- Manure and process wastewater containment and treatment facilities
- Information regarding the manure and process wastewater disposal sites

The Division may require additional information characterizing the manure and process wastewater if deemed necessary to ensure the protection of state waters.

Manure and process wastewater management plans need not be approved by the Division unless they include the land application plan that may be required pursuant to section 5. If a land application plan is included, only the land application plan must be approved. However, the Division will review the plan submitted and may provide comments to the operator within 45 days of receipt. The Commission does not intend for the Division's comments to be binding on the operator, nor does the Commission intend that the Division's comments or lack thereof be relied upon as an approval or a denial of the matters addressed in the plan (CODPHE, 2000c).

Swine Waste Management Plan

The plan must be prepared under the supervision of a Professional Engineer registered in the state of Colorado, by Natural Resources Conservation Service (NRCS), by a qualified Cooperative Extension Agent, by a crop advisor certified by the American Society of Agronomy, or by an independent crop consultant certified by the National Alliance of Independent Crop Consultants. The plan must:

- Include sufficient site-specific hydrologic and agronomic information, supplemented by other scientifically supported information, to document that land application of all residual solids and swine feeding process wastewater will be conducted and sustained at or below the agronomic rate of application for crops or vegetation to be grown on the application site(s).
- Quantify the disposition of all residual solids and swine feeding process wastewater produced at the facility whether put to beneficial use through land application on-site or transported off-site.

Separation Distances

Process wastewater retention structures or manure stockpiles must not be located within a mapped 100-year floodplain as designated and approved by the Water Conservation Control Board (WCCB) unless proper flood proofing measures (structures) are designed and constructed (CODPHE, 2000c).

Water Quality Setbacks are established for housed commercial swine feeding operations such that swine feeding process wastewater collection systems in housed units, and swine feeding process wastewater conveyance, treatment, storage, evaporation, and land application systems, including residual solids stockpiles and impoundments, must not be located (CODPHE 2000b):

- For land application systems only, within 10 feet vertically of the seasonally high ground water level as determined in the monitoring plan.
- Up-gradient and within 300 feet of a reservoir classified for Class I Recreational Use by the Water Quality Control Commission.
- For land application systems only, within 200 feet of any body of surface water, including intermittent streambeds when standing or running water is present in the streambed, unless land application is made either by subsurface injection or by surface application that is followed by incorporation within 48 hours, weather permitting, or the swine waste management plan describes measures that will be implemented to prevent runoff from the application site into the waterbody.
- Within 50 feet of any body of surface water, including intermittent streambeds when standing or running water is present in the streambed.
- Within 150 feet of a private domestic water supply well or within 300 feet of a community domestic water supply well.
- For treatment, storage, and evaporation impoundments and residual solids stockpiles, only, within a 100-year floodplain, unless proper flood proofing measures (structures) are designed and constructed.

Land Application Requirements

Land application of manure and process wastewater must be based on agronomic rates, as determined by one of the following three methods (CODPHE, 2000c):

- If no supplemental or commercial fertilizers are used other than the manure application,

operators do not have to conduct site-specific agronomic analyses. Rather, operators may use preestablished conditions to determine application rates based on standards developed and maintained by the Water Quality Control Division. This method is considered conservative and most protective of the environment.

- Operators may elect to conduct a site-specific agronomic analysis based on the nutrient needs of crops in a growing season. This method may allow for application at rates greater than allowed under the first method.
- Land applications in excess of agronomic rates may be approved if an operator chooses to undertake a comprehensive site-specific study that would account for nutrient losses besides plant uptake. Monitoring may be required by the Division to ensure that applicable water quality standards and protection levels are not exceeded. Operators relying on this third rate calculation method must obtain interim and/or final approval from the Division prior to land application.

Monitoring Requirements

Monitoring requirements are determined on a case-by-case basis and will be required of facilities where the potential for violations poses a significant risk to water quality (CODPHE, 2000c).

7.0 Enforcement Information

The Division will take immediate enforcement action against any housed commercial swine feeding operation that has exceeded the agronomic rate limit of subsection 61.13(4)(e) (CODPHE 2000b).

Inspection Programs

There are no routine inspections. Inspections are complaint driven (USEPA, 1988; NASDA, 1997). The Division had committed to doing 20 CAFO inspections in FY 1999 based on size and species.

8.0 Voluntary Programs

No grant or incentive programs are currently in place to address the water quality impacts that may be associated with CAFOs. The Commission heard testimony from the Colorado Cattle Feeders Association, that efforts are underway to develop a program that would offer technical assistance to its membership. Given the limited scope of the program and the nature of the regulation and sources affected, the Commission has determined that the self-implementing regulations, as adopted, are the appropriate means to address the potential impacts from CAFOs (CODPHE, 2000c).

9.0 Additional State-Specific Information

Cooperative Extension Service

Information regarding the Colorado State University Cooperative Extension is available at www.colostate.edu/Depts/CoopExt/.

Comprehensive Nutrient Management Plan (CNMP) Certification

Colorado does not have a CNMP preparer certification program. Colorado has not developed a certification program for wastewater management plan preparers. Colorado does require Wastewater Facility designs to be prepared by a Professional Engineer, the U.S. Department of Agriculture Soil Conservation Service, or an Agriculture Extension Service Agent.

10.0 References

- CODPHE. 2000a. *Colorado's Nonpoint Source Management Program*. Colorado Department of Public Health and Environment, Water Quality Control Division in cooperation with the Colorado Nonpoint Source Council. January 10, 2000.
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- USEPA. 1998. *Efforts to Improve Controls on Concentrated Animal Feeding Operations (CAFOs)*. Results of June 1998 Survey of States and Regions compiled by G. Beatty. U.S. Environmental Protection Agency, Office of Water, Washington, DC.

Connecticut's CAFO Program

1.0 Background

Based upon information provided to EPA by USDA it is estimated that there are 45 AFOs with from 300 to 1,000 animal units and 9 AFOs with more than 1,000 animal units in Connecticut. These are primarily in the dairy livestock sector (USDA, 1999; USDA, 2000).

Connecticut has not issued any NPDES permits to CAFOs; rather, the state issues individual agriculture permits to problem facilities. According to the Connecticut Nonpoint Source Management Program, the Connecticut Department of Environmental Protection (DEP) will establish and implement an AFO/CAFO permitting system consistent with the new NPDES AFO/CAFO permitting strategy by January 31, 2005. Additionally, DEP will coordinate the development and implementation of nutrient management plans for agricultural operations not subject to the state's Coastal Nonpoint Pollution Control Program and NPDES AFO/CAFO permitting requirements, with 50 percent coverage by December 31, 2004, and 100 percent by December 31, 2014 (Connecticut DEP, n.d.).

2.0 Lead Regulatory Agency

The Connecticut Department of Environmental Protection (DEP) administers a regulatory program that addresses waste management issues associated with agricultural operations (Voorhees, 1997). More information about DEP can be found at <http://dep.state.ct.us/>.

3.0 State Regulations Regarding AFOs/CAFOs

Connecticut CAFOs are exempt from air quality regulations if they are following best management practices (BMPs).

4.0 Types of Permits

NPDES

Connecticut is approved to issue federal NPDES permits. Facilities are regulated on a case-by-case basis. Connecticut DEP supports issuing a general discharge permit to AFOs/CAFOs, but have met with resistance from the agricultural community (Voorhees, 1997).

Other

The state issues individual agricultural permits to problem facilities. The type of permit issued depends on local requirements. Permits are also required for new facilities and structures (NASDA, 1997). The Department of Agriculture also issues Intensive Poultry Operation permits.

5.0 Permit Coverage

No NPDES permits have been developed and issued to CAFOs.

6.0 Permit Conditions

Approvals

Approvals are required for new, small operations. New operations are required to have a site appraisal before construction.

Lagoon Design and Specifications

Facilities are required to follow design standards if they are permitted and/or are receiving cost-share assistance. Certain requirements are placed on waste storage structures (NASDA, 1997):

- State and federal approval must be obtained.
- Structures must be 2 to 4 feet from ground water sources.
- Lagoon liners should follow Natural Resources Conservation Service (NRCS) specifications, but clay liner is optional with state approval.
- Storage structure capacity must meet NRCS standards.
- Lagoon seepage limits are to be based on state or federal requirements.

Discharge Rules

Connecticut DEP and Connecticut Extension Service are working with NRCS to develop requirements for operations to prevent discharge as a result of a 25-year 24-hour storm event. They are leaning toward a zero discharge policy (Voorhees, 1997).

Waste Management Plans

Connecticut DEP works with technical service agencies to help farmers develop and implement Agricultural Waste Management Plans (AWMPs), which address manure, contaminated storm water runoff from feeding areas, process waters, and silage leachate. Most AWMPs are applied to dairy operations that do not meet the federal definition of a CAFO. Requirements are placed on facilities on a case-by-case basis (Voorhees, 1997).

Separation Distances

Separation distances between facilities and dwellings, property lines, and water wells are determined on a case-by-case basis, and the locality and the type of structure are factors. The required distance from the bottom of a waste structure to ground water is 2 to 4 feet and is subject to state and/or federal approval (NASDA, 1997).

Land Application Requirements

It is recommended that facilities follow resource management plans and BMPs when applying wastes to land. Local notification must be given for diversion of any amount (NASDA, 1997).

7.0 Enforcement Information

General Enforcement Information

No information was found in publically available sources.

General Inspection Information

State and/or federal compliance visits are required. Violators are also identified through complaints (NASDA, 1997).

8.0 Voluntary Programs

Connecticut DEP is the lead agency for voluntary programs. DEP and the Connecticut Extension Service help farmers to voluntarily reduce and prevent pollution of state waters by agricultural wastes (NASDA, 1997; Voorhees, 1997).

DEP encourages agricultural operators to voluntarily comply with waste management regulations by developing and maintaining farm risk management plans (RMPs) and BMPs. NRCS or the University of Connecticut Extension Service are available to help operators design their plan (Voorhees, 1997).

CAFOs may be eligible for Environmental Quality Incentives Program (EQIP) funding and State Environmental Assistance Funding. Available cost-share funds are limited (NASDA, 1997).

9.0 Additional State-Specific Information

Cooperative Extension Service

The University of Connecticut Cooperative Extension System works with DEP to help farmers reduce and prevent water pollution from agricultural wastes. Extension information can be found at www.lib.uconn.edu/CANR/ces/index.html.

Comprehensive Nutrient Management Plan (CNMP) Certification

Connecticut does not have a CNMP preparer certification program.

10.0 References

Connecticut DEP. n.d. *Connecticut Nonpoint Source Management Program Elements*. Connecticut Department of Environmental Protection.
<<http://www.dep.state.ct.us/wtr/nps/npsele.pdf>>. Accessed October 2000.

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U.S. Department of Agriculture.

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Delaware's CAFO Program

1.0 Background

Based upon information provided to EPA by USDA it is estimated that there are 349 AFOs with from 300 to 1,000 animal units and 95 AFOs with more than 1,000 animal units in Delaware. These are primarily in the broiler sector (USDA, 1999; USDA, 2000).

The Delaware Nutrient Management Program was established in June 1999 as a result of the Delaware Nutrient Management Law (Title 3, Chapter 22 of the Delaware Code). The Delaware Nutrient Management Commission (DNMC) was established to direct the program and develop regulations pertaining to nutrient management, waste management for AFOs, and NPDES permits for CAFOs (DE Department of Agriculture, 2000).

2.0 Lead Regulatory Agency

The Water Resource Division of the Delaware Department of Natural Resources and Environmental Control (DNREC) administers the regulatory programs related to CAFOs (DNREC, 2000). The Delaware Nutrient Management Commission, under the Delaware Department of Agriculture (DDA), develops regulations pertaining to nutrient management, waste management for AFOs, and NPDES permits for CAFOs (DDA, 2000).

3.0 State Regulations Regarding AFOs/CAFOs

Delaware's unannotated Code of Regulations can be found at www.lexislawpublishing.com/sdCGI-BIN/om_isapi.dll?clientID=981&infobase=decode.NFO&softpage=browse_frame_pg.

CAFOs must follow state and federal regulations regarding air quality.

The state of Delaware encourages the use of best management practices for manure management. Guidance on the management of manure can be found in the final regulations under Policies and Procedures for Land Treatment of Wastes, Part IV (Land Treatment), Subpart A. [Subpart B has been reserved while the state conducts further research on animal waste management alternatives.]

4.0 Types of Permits

NPDES

Delaware is authorized to issue NPDES permits (Letzkus, 1997).

Other

Permits are required for manure storage ponds or structures that hold more than 40,000 gallons.

5.0 Permit Coverage

Federal animal unit thresholds apply for NPDES permits.

6.0 Permit Conditions

Approvals

The state has no site approval requirements (NASDA, 1997).

Lagoon Design and Specifications

The state does not have specific design requirements for waste structures, although facilities follow applicable NRCS guidelines. There are no state standards for storage capacity of waste structures or the types of materials used to line the structures. There is a maximum seepage limit of 1 inch/year or 10^{-7} cm/sec (NASDA, 1997).

Discharge Rules

No information was found in publically available sources.

Waste Management Plans

No information was found in publically available sources.

Separation Distances

The state restricts siting within 150 feet of water bodies or wells.

Land Application Requirements

Per § 2247, a nutrient management plan (NMP) must be developed by all AFOs with over 8 animal units or persons who control property in excess of ten acres on which nutrients are applied (note: animal unit threshold under nutrient management act may differ from NPDES thresholds). The NMP must include the following site-specific handling and storage considerations:

- Diverting clean water from contacting animal waste or litter.
- Preventing storage, collection, and conveyance systems from leaking organic matter, nutrients, and pathogens to ground or surface water.
- Providing adequate storage to prevent polluted runoff.
- Handling manure and litter to reduce nutrient losses.
- Managing dead animals to protect ground water and surface waters.
- Tillage and crop residue management practices.

The NMP must be amended per § 2247(d) whenever there is any significant change in the design, construction, or operation that has a significant effect on the potential for the discharge of pollutants to state waters.

7.0 Enforcement Information

No information was found in publically available sources.

Inspection Programs

There are no routine on-site inspections, though periodic inspections may occur (NASDA, 1997).

8.0 Voluntary Programs

Voluntary programs are available to encourage Delaware farmers to implement BMPs. DNMC supports development of BMPs, outreach and education, and the certification program. In addition, the University of Delaware has conducted nutrient managers training for government and industry representatives. Incentives for CAFOs include state and federal cost-share programs, incentive funds, and low-interest loans (NASDA, 1997).

9.0 Additional State-Specific Information

Cooperative Extension Service

Information regarding the University of Delaware's Cooperative Extension Service can be obtained at <http://bluehen.ags.udel.edu/deces/>.

Comprehensive Nutrient Management Plan (CNMP) Certification

Delaware has a program for CNMP certification under development. The program requires certification of persons directly involved with the generation or application of nutrients within the state (Delaware Code Title 3, Chapter 22 Nutrient Management Law). The Delaware Nutrient Management Commission developed a certification program in June 1999.

The Delaware State Nutrient Management Law requires nutrient management plans (NMPs) for any AFO with more than eight animal units (AUs) or any person who owns, leases, or otherwise controls property in excess of 10 acres on which nutrients are applied (§ 2241). CAFOs regulated under NPDES are required to develop an NMP. The State Nutrient Management Plan requires an NMP to be developed by a certified nutrient handler. Under Delaware's program there are four classes of certified nutrient handlers (§ 2241).

Certification requirements do not apply to individuals who are performing nutrient application services under the direct supervision of a certified person as a private or commercial nutrient handler. The state of Delaware makes nutrient consultants available at no cost through local conservation districts to anyone requesting assistance in developing CNMPs.

Case Studies/Innovative Programs

The state emphasizes voluntary implementation in addition to regulation as the means to achieve water quality improvement. The state provides the following statistics: approximately 50 percent of all poultry growers are storing manure under cover, and more than 70 percent are composting rather than burying their dead animals in the ground. In addition, manure application rates have fallen, and new technologies such as Pre-Sidedress Nitrogen Tests, manure analysis, and precision agriculture equipment are used (DNREC, 1999a).

The Delaware Coastal Nonpoint Pollution Control Program, commonly known as 6217, has an agricultural component that identifies facility wastewater and runoff from large and small confined animal facilities as nonpoint sources that need to be addressed (DNREC, 1999b).

10.0 References

- DNREC. 2000. *Delaware Division of Water Resources*. Delaware Department of Natural Resources and Environmental Control.
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Florida's CAFO Program

1.0 Background

Based upon information provided to EPA by USDA it is estimated that there are 227 AFOs with from 300 to 1,000 animal units and 202 AFOs with more than 1,000 animal units in Florida. These are primarily in the broiler sector (USDA, 1999; USDA, 2000).

2.0 Lead Regulatory Agency

The Florida Department of Environmental Protection (DEP) is the lead agency regarding CAFOs in Florida. Within DEP, the Division of Water Resource Management and its Agriculture subsection also help regulate CAFOs. Information about DEP and the Division can be found at www.dep.state.fl.us/ and www.dep.state.fl.us/water/, respectively.

3.0 State Regulations Regarding AFOs/CAFOs

Florida's surface water regulations for AFOs/CAFOs are found in the Florida Administrative Code (F.A.C.), Chapter 62-670 (Feedlot and Dairy Wastewater Treatment and Management Requirements), Chapter 62-620 (Wastewater Facility and Activities Permitting), and Wastewater Permit Application Form 2B (Permit to Discharge Wastewater from Concentrated Animal Feeding Operations and Aquatic Animal Production Facilities). The 40 CFR 412 effluent limitations are adopted by reference in Chapter 62-660, F.A.C. Discharges to ground water are regulated under Chapter 62-522, F.A.C. Specific language from Chapter 62-670 can be found at www.dep.state.fl.us/ogc/documents/rules/wastewater/62%2D670.pdf. Florida is currently working on a strategy to implement the program requirements of EPA's *Unified Strategy for Animal Feeding Operations* (DEP, 2000b).

4.0 Types of Permits

NPDES

Florida is authorized to issue NPDES permits. CAFOs are permitted under the state NPDES program.

5.0 Permit Coverage

Federal animal unit thresholds apply for CAFOs under the state NPDES program. Specific requirements have been established under Florida law for dairies in the Lake Okeechobee Drainage Basin. Florida regulations state that operations that hold animals below the specified animal unit thresholds may be designated CAFOs on a case-by-case basis if those facilities are found to discharge pollutants into waters of the state directly or through a man-made conveyance (DEP, 1996). Florida's definition of CAFO (Chapter 62-670.200) also specifies that animal feeding operations that are able to contain process wastewater and runoff during a 25-year, 24-hour storm event are not considered CAFOs by the state regardless of the number of animals at the facility (DEP, 1996).

Permits are required for major poultry layer facilities with liquid manure systems or spray irrigation of wastewater. Waste disposal in accordance with an approved Soil and Water Conservation District Board Plan eliminates the permit requirement for a major poultry layer

facility with a dry manure system, provided the wastewater from egg washing is combined with the manure before application. Permits are not required for poultry broiler facilities with dry manure systems.

Florida regulations require all dairies in the Lake Okeechobee Drainage Basin to have permits. Dairies outside the Lake Okeechobee Drainage Basin that have more than 1,000 animal units will be required to apply for a permit in two years under a draft Model Consent Agreement currently being negotiated with the dairy industry.

6.0 Permit Conditions

Permit conditions are specified under Rule 62-670.500, F.A.C., Requirements for Dairy Farms in the Lake Okeechobee Drainage Basin, and under Rule 62-670.600, F.A.C., Wastewater Treatment for Commercial Egg Production Facilities. In addition, specific conditions can be incorporated into permits issued outside the Lake Okeechobee Drainage Basin, pursuant to Chapters 62-620 and 62-522, F.A.C.

A permit is issued only if the applicant provides reasonable assurance of compliance with applicable rules. All permit applications must be signed and sealed by a professional engineer and accompanied with the appropriate application fee, pursuant to Chapter 471, Florida Statutes, and Chapter 62-4, F.A.C., respectively.

Approvals

No information was found in publically available sources.

Lagoon Design and Specifications

The volume of dairy lagoons should be designed to hold the storage of runoff from a 25-year, 24-hour storm event and be large enough to hold inputs for the longest anticipated period between emptying. The design and construction should conform to the criteria contained in the local Soil Conservation Service (SCS) Field Office Technical Guide (DEP, 1996).

Discharge Rules

Discharge is allowed under chronic or catastrophic rainfall conditions provided the facility is designed and operated to contain the 25-year, 24-hour storm event. The language in 62-670.600 pertaining to wastewater treatment for commercial egg production, however, does state that discharges are prohibited "except in the event of a 25-year, 24-hour storm event" (DEP, 1996).

Waste Management Plans

A waste management plan prepared by the NRCS or a private consultant and signed and sealed by a Florida licensed professional engineer is required as part of the permit application for a dairy or poultry layer facility and is incorporated into the permit by reference. A NRCS plan is also required for unpermitted major poultry layer facilities that combine egg wash wastewater with dry manure before application.

Separation Distances

All dairy farms constructed after June 1987 in the Lake Okeechobee Drainage Basin must maintain specific setback distances between storage and treatment facilities or high-intensity areas and drinking water supply wells (300 feet), natural watercourses (200 feet), and drainage ditches (100 feet). Additionally, the same dairy farms must maintain setback distances from land application areas and drinking water supply wells (200 feet), natural watercourses (50 feet), and drainage ditches (50 feet). In practice, these setback distances are often also used in permits for dairies in other areas of the state. Similar setback distances are required for land application of egg wash wastewater at permitted major poultry layer facilities.

Land Application Requirements

Manure must be applied at agronomic rates. Permits typically require that application be performed in a manner that minimizes impacts to neighbors. For dairies in the Lake Okeechobee Drainage Basin that originated after June 1987 and major poultry layer operations, separation distances are specified between land application sites and wells. At Lake Okeechobee dairies, waste cannot be applied to areas where the water table is less than 18 inches from the land surface.

Other Requirements

Quarterly ground water monitoring is required near unlined storage ponds and land application sites.

7.0 Enforcement Information

General Enforcement Information

Permitted AFOs are inspected at least annually and enforcement is taken for noncompliance. Unpermitted AFOs are inspected in response to complaints and violations are resolved through normal enforcement procedures.

General Inspection Information

Annual inspections and reporting are required for permitted facilities. Florida has developed an EPA approved CAFO Compliance Assurance Plan to implement EPA's *Unified Strategy for Animal Feeding Operations* and initiated inspections in 1999. Current plans are to inspect the majority of CAFOs in Florida by 2004, excluding poultry operations with dry manure systems.

8.0 Voluntary Programs

The Florida Department of Agriculture and Consumer Services is the lead agency for voluntary programs.

The voluntary, incentive-based program in the Suwannee River Basin is primarily intended to reduce nutrient loadings from AFOs, fertilizer use, septic tanks, and other sources to ground waters and thereby reduce loadings to hydrologically connected surface waters.

9.0 Additional State-Specific Information

Cooperative Extension Service

Florida Cooperative Extension is a partnership between the University of Florida's Institute of Food and Agricultural Sciences (state), the United States Department of Agriculture (federal), and Florida's county governments (county). The Extension Service operates as part of the University of Florida's Institute of Food and Agricultural Sciences (IFAS) and serves each of the state's 67 counties by providing information and conducting educational programs on issues such as sustainable agriculture. More information about the Extension and IFAS can be found at www.ifas.ufl.edu/www/extension/ces.htm and <http://gnv.ifas.ufl.edu/>, respectively.

Comprehensive Nutrient Management Plan (CNMP) Certification

Florida does not have a certification program for comprehensive nutrient management plan preparers. A waste management plan is required for all permitted operations.

Additional Information

The Florida Department of Agriculture and Consumer Services, the Institute of Food and Agricultural Services, and the Water Management Districts are also involved with CAFO regulation in Florida.

The Florida Cattlemen's Association developed a manual in 1999 to help establish sound, responsible guiding principles for cow and calf operations. *Water Quality Best Management Practices for Cow/Calf Operations in Florida* provides users with information about specific practices that will help protect water quality from the damaging activities that normally occur with beef and cattle production. Specific information from the manual can be found at www.dep.state.fl.us/water/slerp/nonpoint_stormwater/agsrc/docs/fcabmp/fcaccbmp.pdf.

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Georgia's CAFO Program

1.0 Background

Based upon information provided to EPA by USDA it is estimated that there are 1,342 AFOs with from 300 to 1,000 animal units and 900 AFOs with more than 1,000 animal units in Georgia. These are primarily in the broiler sector (USDA, 1999; USDA, 2000).

2.0 Lead Regulatory Agency

The Environmental Protection Division of the Georgia Department of Natural Resources (www.ganet.org/dnr/environ) administers the rules and regulations of the Water Control Act, including the NPDES program and the land disposal permitting program.

3.0 State Regulations Regarding AFOs/CAFOs

Georgia proposed revisions to the Rules and Regulations for Water Quality Control, Chapter 391-3-6, as of December 23, 1998, to address AFO permit requirements. Additionally, Georgia proposed specific revisions to the water quality control regulations under Chapter 391-3-6-.20 to address swine feeding operations in May 1999. The purpose of the proposed revisions is to state the scope of the new rule for permitting waste disposal by AFOs because such disposal was previously permitted and had no specific provisions. The proposed revisions, which became effective July 2000, established thresholds for permitting and defined the Comprehensive Nutrient Management Plans. Additionally, individual permits may now be required, and AFOs not meeting the CAFO threshold may still be required to obtain a permit, based on the revisions.

The revisions to Chapter 391-3-6.20 resulted in a number of changes for swine feeding operations, most specifically involving requirements for permit applications and waste storage and disposal systems.

The owner or operator of an existing, new, or expanding swine feeding operation with 301 to 1,000 AUs must submit a registration form to the Division on or before October 31, 2000. By October 31, 2002 the owner or operator must have in operation waste storage and disposal systems, that have been designed and constructed in accordance with NRCS guidance (Chapter 391-6.20(4)).

Existing swine feeding operations with 1,001 to 3,000 AUs must obtain an individual permit from the Division by October 31, 2000, in accordance with Chapter 391-3-6.20(5). All permit applications should be submitted 180 days in advance.

New or expanding facilities with 1,001 to 3,000 AUs must obtain an individual permit in accordance with Chapter 391-3-6.20(6)(a), submitting their permit application 180 days in advance. Before beginning to feed swine, these facilities must also have in operation waste storage and disposal systems that have been designed and constructed in accordance with NRCS guidance (Chapter 391-3-6.20(6)).

Existing operations with more than 3,000 AUs must obtain an individual permit from the Division by October 31, 2000, in accordance with Chapter 391-3-6.20(7)(a), submitting the permit application 180 days in advance. If the individual permit is not obtained by October 31, 2000, the operation will be closed or reduced to 1,000 AUs or less. By October 31, 2002, these

facilities must also have in operation waste storage and disposal systems that have been designed and constructed in accordance with NRCS guidance.

For more specific permit requirement information for different sizes of facilities, refer to the July 2000 Chapter 391-3-6 revisions (www.ganet.org/dnr/environ/rules_files/exist_files/391-3-6.pdf). This document contains specific information for various sizes of swine feeding operations, including freeboard, minimum buffer, seepage, monitoring well, and storm event requirements.

A "bad actor" bill allows the Environmental Protection Division to deny permits to operators with poor compliance records in or out of the state (USEPA, 1998).

4.0 Types of Permits

NPDES

Georgia is authorized to administer the federal NPDES Program. Georgia defines a CAFO as any point source that meets the criteria set forth in federal regulations (NASDA Research Foundation, 1997). Animal feeding operations in the state of Georgia that meet applicable design and operating standards and are not discharging to state waters are not required to obtain an NPDES permit. In general, NPDES permits are not commonly issued to CAFOs in Georgia. The proposed Swine Feeding Operation Permit Requirements establish individual NPDES permitting requirements for large (more than 1,000 AUs) facilities.

Other

Depending on the size and type of operation, an AFO may be required to obtain a general or individual land application system (LAS) permit.

5.0 Permit Coverage

Under the Swine Feeding Operation Permit Requirements (Chapter 391-3-6.20), a "permit by rule" (for non-NPDES permits) has been established for facilities that have 301 to 1,000 AUs and do not discharge to surface waters. Individual NPDES permits are required for existing or new/expanding swine facilities with 1,000 to 3,000 animal units to protect surface water. Individual NPDES permits are also required for facilities with more than 3,000 AUs to protect surface waters and ground water.

LAS permits are issued to any facility that disposes of pollutants by applying the waste to the surface or beneath the surface of the land. Land disposal systems that use vegetation to remove some pollutants are included. Under the proposed Animal Feeding Operation Permit Requirements, an AFO with more than 1,000 AUs must apply for an individual LAS permit and a facility with fewer than 1,000 AUs may be required to apply for an individual LAS permit. Existing unpermitted AFOs with more than 1,000 AUs must comply with the general LAS permit.

If the land disposal system employs overland flow, subsurface drains, or other techniques that result in a discharge into surface waters, the operator must obtain coverage under an NPDES permit instead of an LAS permit (NASDA Research Foundation, 1997).

6.0 Permit Conditions

Approvals

A site appraisal is required before development, and facilities must be designed according to NRCS standards (NASDA, 1997).

Lagoon Design and Specifications

Waste treatment systems should be designed following NRCS standards. More specifically, lagoon seepage is limited to 1/8 inch per day, and the freeboard must be maintained at 2 feet (NASDA, 1997). Lagoons should be designed to hold the runoff from a 25-year, 24-hour storm event.

Discharge Rules

No information was found in publically available sources.

Waste Management Plans

Certified Nutrient Management Plans must be submitted to the state.

Separation Distances

No new swine facility with more than 300 AUs can be built within a 100-year floodplain.

Setback requirements vary for new swine facilities with more than 1,000 AUs and the requirements for facilities with more than 3,000 AUs are more strict. For example, new or expanding swine facilities with more than 1,000 AUs must maintain a 700-foot buffer between any public area, whereas similar facilities with more than 3,00 AUs must maintain a 1,750-foot buffer from the same areas (Chapter 391-3-6-.20(6)k and 391-3-6.20(8)j). Waste storage tanks should be at least 1,000 feet from homes of persons other than the CAFO owner. Neighboring property lines must be 150 feet from the waste treatment facility (NASDA, 1997; NASDA Research Foundation, 1997).

Land Application Requirements

The LAS permits require slow-rate spray irrigation at agronomic rates, no discharge to surface water, ground water monitoring, no exceedance of drinking water maximum contamination levels in ground water, soil monitoring, buffer zones, and quarterly reporting. Systems must be built and operated according to NRCS criteria. In general, all NRCS guidelines, such as avoiding waste application to land that is subject to flooding, adjacent to waterbodies, or steeply sloping, are to be followed.

Financial Assurance

The proposed Swine Feeding Rule requires statements of financial assurance from facilities with more than 3,000 AUs to establish evidence of responsibility for closure of waste treatment facilities. Requirements include having a detailed written estimate of the cost of cleaning and closing a swine feeding operation and establishing a closure trust fund, letter of credit, or closure

insurance.

7.0 Enforcement Information

No information was found in publically available sources.

8.0 Voluntary Programs

The Georgia Pollution Prevention Assistance Department allocated a budget to establish the Agricultural Pollution Prevention Program in cooperation with University of Georgia's Biological and Agricultural Engineering Department in 1994. The goal of the program is to encourage the agricultural community to practice voluntary pollution prevention. The program provides technical assistance and information on pollution prevention practices, including site selection, facility layout, and individual pollution prevention site assessments.

The "One Plan" initiative was developed as a program-neutral attempt (i.e., it did not specify agency programs or sources of financial or technical assistance) to address agricultural pollution problems in the Upper Oconee Basin. The One Plan initiative was developed with input from a diverse group of stakeholders from the Upper Oconee Basin. This initiative integrates technical assistance with a coordinated site-specific planning process. The initiative is formalized into a single resource management plan that addresses agricultural production and other resource objectives and meets legal and programmatic requirements. Two farms were selected as pilot operation sites to carry out the planning process (NASDA Newsletter, winter 1997).

9.0 Additional State-Specific Information

Cooperative Extension Service

Within the University of Georgia College of Agricultural and Environmental Sciences Cooperative Extension Service is the Animal and Dairy Science Department. This department offers information through a newsletter and specific publications on beef cattle, dairy cattle, horses, and swine. More information about the extension service and the department is available at www.ces.uga.edu/ and www.ces.uga.edu/Agriculture/asdsvm/ansci-home.html.

Comprehensive Nutrient Management Plan (CNMP) Certification

The Georgia Swine Feeding Operations Rule (Chapter 391-3-6) requires swine feeding operators to go through a training program. Once the operators have completed the training program, they are certified by the Georgia Department of Agriculture and can prepare CNMPs. The swine permit rule requires a CNMP for facilities with the following (391-3-6-.20):

- 301 to 1,000 AUs
- Existing, new, or expanding facilities with 1,001 to 3,000 AUs
- Existing, new, and expanding operations with more than 3,000 AUs

All swine facilities with individual permits must implement a CNMP prior to startup. All other livestock operations are regulated under 391-3-6-.15. There is no certification program for other livestock operations. Georgia Department of Agriculture developed and implements the program. Proof of training, certification, continuing education, and CNMPs must be submitted to the Georgia Environmental Protection Division for review (391-3-6-.20).

Swine feeding operations are required to have certified operators for (391-3-6-.20):

- 301 to 1,000 AUs
- Existing operations with 301-1,000 AU by October 31, 2001
- Existing operation with 1,001-3,000 AUs by October 31, 2001
- Existing operations with more than 3,000 AUs by October 31, 2001
- New or expanding operations with more 3,000 AUs prior to startup

The swine operator training and certification program requires swine operators to complete training and continuing education to maintain this certification. Certification training agenda and topics include BMPs, CNMPs, understanding regulations and water quality laws, standards and practices, siting, pollution prevention, monitoring, and record keeping (391-3-6-.20).

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Hawaii's CAFO Program

1.0 Background

Based upon information provided to EPA by USDA it is estimated that there are 27 AFOs with from 300 to 1,000 animal units and 17 AFOs with more than 1,000 animal units in Hawaii (USDA, 1999; USDA, 2000).

2.0 Lead Regulatory Agency

State oversight of CAFO issues is complaint-driven. Responsibility for animal waste management is divided between two branches of the Department of Health (DOH) (www.state.hi.us/health/). The Clean Water Branch (www.state.hi.us/health/eh/cwb/index.htm) issues individual NPDES permits for CAFOs, while the Wastewater Branch (www.state.hi.us/health/eh/eiww00.htm) reviews plans and specifications for AFOs and conducts complaint-based inspections (USEPA, 2000).

3.0 State Regulations Regarding AFOs/CAFOs

The NPDES Permit is regulated under Hawaii Administrative Rules, Chapter 11-55 (www.state.hi.us/health/rules/emd/11-55.pdf), Water Pollution Control.

4.0 Types of Permits

NPDES

Hawaii is authorized to administer the NPDES program.

5.0 Permit Coverage

Not all animal feeding operations are required to obtain NPDES permits. Exclusions are consistent with the federal regulation.

6.0 Permit Conditions

No information was found in publically available sources.

7.0 Enforcement Information

The Wastewater Branch of the Department of Health conducts complaint-based inspections (USEPA, 2000).

8.0 Voluntary Programs

No information was found in publically available sources.

9.0 Additional State-Specific Information

Cooperative Extension Service

Although the University of Hawaii at Manoa, College of Tropical Agriculture and Human Resources, Extension and Outreach, does not offer programs for animal feedlots, it does provide programs for sustainable agriculture and a number of agriculture-related activities. Information about the Extension can be found at www2.ctahr.hawaii.edu/extout/extout.asp.

Comprehensive Nutrient Management Plan (CNMP) Certification

Hawaii does not have a comprehensive nutrient management plan preparer certification program.

Other Information

Hawaii Department of Health is currently funding a 2-year, EPA-sponsored section 319(h) nonpoint source project to educate livestock producers about proper animal waste management. This project will inventory AFOs in Hawaii and conduct educational workshops on each major island. The project will also conduct on-site assessments of specific operations, sponsor discussions about markets for animal waste products, and provide technical assistance for pollution prevention. Hawaii's Natural Resources Conservation Service (NRCS) is also educating Hawaiian communities on proper animal waste management (USEPA, 2000).

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Idaho's CAFO Program

1.0 Background

Based on information provided to EPA by the U.S. Department of Agriculture (USDA), it is estimated that there are 240 AFOs with from 300 to 1,000 animal units and 149 AFOs with more than 1,000 animal units in Idaho. These are primarily in the beef and dairy livestock sectors (USDA, 1999; USDA, 2000). Idaho has taken specific actions to address water quality impacts from these livestock sectors. In 1995 a Memorandum of Understanding (MOU) was developed between state agencies, the federal government, and private organizations to address dairy operations. In 2000 a similar process has been initiated for beef operations.

2.0 Lead Regulatory Agency

The Idaho Department of Environmental Quality (IDEQ) reviews and approves plans and specifications for all new or modified waste treatment and disposal facilities prior to construction. Since 1995 the Idaho State Department of Agriculture (ISDA) has assumed greater authority for the regulation of animal feeding operations in Idaho. In 1995 an MOU gave ISDA approval authority for dairy waste systems. Recent legislative actions have also given approval authority for beef waste systems to ISDA. More information on ISDA's role is provided below.

ISDA administers the rules governing dairy waste (IDAPA 02, Title 04, Chapter 14) as set forth in the 1995 Idaho Dairy Pollution Prevention Initiative Memorandum of Understanding (MOU). This MOU gives ISDA the responsibility for promulgating and enforcing rules to carry out the MOU, including developing dairy waste inspection protocols, conducting periodic inspections to ensure compliance with the Clean Water Act (CWA) and Idaho Water Quality Standards, reporting releases to U.S. waters, and approving the design and construction of dairy waste management systems as required in the *Idaho Waste Management Guidelines for Confined Feeding Operations*.

During the 2000 legislative session the Idaho state legislature passed the Beef Cattle Environmental Control Act. The state is in the process of developing the Beef Cattle Environmental Control Program, which will regulate beef animal feeding operations in the state to protect water quality. The beef cattle program is being modeled after the dairy program. An MOU is under development between the ISDA, IDEQ, USEPA, and the Idaho Cattle Association. The public comment period on the draft MOU closes November 11, 2000. The MOU will establish ISDA as the primary regulatory agency and delegate certain regulatory authorities from IDEQ to ISDA. IDEQ and USEPA will provide technical assistance, training, program review, and direct involvement in cases of imminent and substantial danger to human health or the environment. The Idaho Cattle Association is responsible for outreach and education to beef animal feeding operations on program requirements and rules.

3.0 State Regulations Regarding AFOs/CAFOs

In the 1999 legislative session a law was passed directing IDEQ to develop rules regulating new and expanded large swine and poultry operations. The law directed IDEQ to establish what was deemed to be "large." The law directed IDEQ to develop rules that would be protective of surface and ground water quality. IDEQ finalized these rules in April 2000. The rules identify as "large" and subject to the rule, operations with more than 2,000 animal units. An "expanding" operation is one that increases its capacity by 10 percent. Operations covered by the regulation

are required to apply for and obtain a permit that covers the construction, operation, and closure of the facility. Nutrient Management Plans prepared by a certified planner are required for these operations, and NRCS Code 590 is identified as the standard for these plans. In 2000 additional legislation was passed requiring IDEQ to amend the rule to require financial assurances for the operation, closure, and remediation of swine and poultry operations.

In 2000, the Beef Cattle Environmental Control Act was passed. It directs ISAD to develop a program to oversee the design and construction of beef cattle animal feeding operations. Requirements identified in the act include the development of nutrient management plans.

The Idaho Water Quality Standards and Wastewater Treatment Requirements (Title 1, Chapter 2) regulate confined feeding operations and land treatment of solid and liquid dairy waste as it relates to protecting state waters (Palmer, 1993). Idaho Dairy Law (Title 37, Chapter 4) regulates confined feeding operations as they apply to waste management and sanitation of Grade A dairy products. Rules of the Department of Agriculture Governing Dairy Waste (IDAPA 02, Title 04, Chapter 14) govern the design, function, and management practices of dairy waste systems.

The Idaho Ground Water Quality Rule (IDAPA 16, Title 1, Chapter 11) regulates confined feeding operations and land treatment of solid and liquid dairy waste as it relates to protecting ground water (Palmer, 1993).

4.0 Type of Permits

NPDES

Idaho is not authorized to issue NPDES permits. Therefore, animal feeding operations that qualify under federal CAFO regulations are covered under EPA Region 10's general NPDES permit (NASDA, 1997).

Other

Idaho issues state permits to dairy farms that cover both environmental quality and food safety under the terms of an MOU between state and federal regulators and the Idaho Dairymen's Association. Idaho dairy farms must have Grade A or B milk permits, and all dairy farms' waste systems are linked to these permits (NASDA, 1997). No milk producer can sell milk unless the dairy farm has a Grade A permit, which requires dairy farm operators to install and use dairy waste systems in a manner consistent with the Idaho Waste Management Guidelines for Confined Feeding Operations.

5.0 Permit Coverage

Under Rules Regulating Swine and Poultry Facilities, all new or expanding swine and poultry facilities with a one-time capacity for 2,000 animal units would be required to obtain a permit. The rule defines an AU to be 2.5 swine, each weighing more than 55 pounds; 10 weaned swine, each weighing less than 55 pounds; or 100 chickens, turkeys, ducks, geese, or any other birds raised in captivity. The permit covers construction, operation, and closure of the facility. The permit application must include a construction plan, site characterization, nutrient management plan, and closure plan. The site characterization plan includes any land application site(s) owned or operated by the applicant. The rules identify the contents of these plans and reports. IDEQ is responsible for the review and approval of the permit. The permit approval process

includes a public notice/review component. Existing facilities are exempt from the requirement to obtain a permit if they register within 3 months of the proposed rule as long as they do not expand. Existing facilities must submit a nutrient management plan and a closure plan within 2 years of the effective date of the rule.

All dairy farms with one or more milking cows, sheep, or goats must have a state-issued Grade A or B permit that qualifies the producer to sell milk. Dairy waste management systems are regulated through the milk grading permits. The ISDA is responsible for the review and approval of the design, construction, operation, and location of dairy waste systems. These waste systems must conform to the Idaho Waste Management Guidelines for Confined Feeding Operations. These permits require Nutrient Management Plans prepared in accordance with NRCS Code 590.

Rules to implement the Beef Cattle Environmental Control Act are still under development.

6.0 Permit Conditions

Approvals

ISDA is responsible for the review and approval of permits issued to dairy operations. IDEQ is responsible for the review and approval of permits issued to new or expanding swine and poultry operations. The draft MOU distributed for comment for implementation of the Beef Cattle Environmental Control Act gives ISDA primary responsibility for implementation of the program to address beef cattle operations.

Lagoon Design/Specifications

The Rules Regulating Swine and Poultry Facilities require IDEQ to determine whether the operation is suitable for the proposed location. In making this determination IDEQ considers the location of the facility relative to flood zones, dwellings, wells, surface and ground water, and other relevant site features. The rules contain specific requirements applicable to lagoons and other liquid storage impoundments. Lagoons and impoundments are not permitted in the 100-year floodplain. Lagoons and impoundments must maintain 1 foot of freeboard in addition to storage requirements, and seepage rates cannot exceed 1×10^{-7} cm/sec. Ground water and/or leak detection monitoring is required for all operations that use a liquid storage impoundment.

Discharge Rules

CAFOs issued NPDES permits by the USEPA would be subject to the discharge rules in the Effluent Limitations Guidelines for Feedlots (40 CFR Part 412). The Idaho swine and poultry operation rules require facilities to be designed to contain the minimum expected operating water balance, the 25-year, 24-hour rainfall event, and the 1 in 5-year winter runoff. No other discharges are permitted. The ISDA Beef Cattle Animal Feeding Operation Program, Overview of Compliance and Enforcement, indicates that the number of these operations with flowing discharges is expected to be very low. The program also indicates that direct animal contact is considered to be a discharge.

Waste Management Plans

The dairy waste and swine and poultry operation rules implemented by ISDA and IDEQ require the development of nutrient management plans developed in accordance with NRCS standards. The dairy waste rules specifically require covered operations to comply with the 1997 Idaho Waste Management Guidelines for Confined Feeding Operations.

These guidelines state that livestock waste management plans, submitted to either IDEQ or ISDA should include the following:

- A description of equipment and structures used to collect, transport, store, and apply animal wastewater, including storage volume and time.
- Schedules for emptying and applying wastes.
- Schedules, rates, and locations for application of wastes.
- Written agreements with other landowners to accept liquid wastes.

Separation Distances

Neither the dairy nor swine and poultry operation permit rules identify specific separation distances. The state recommends a 300-foot separation distance from dwellings and property lines. Some counties have separation distance requirements of up to 0.5 mile. The state prefers a 1,000-foot minimum separation distance from public water supplies. Storage lagoons should be 100 feet from streams and public water wells (Palmer, 1993).

Land Application Requirements

Nutrient Management Plans developed under the dairy and swine and poultry regulations require a nutrient management plan prepared in accordance with NRCS Code 590.

7.0 Enforcement Information

General Enforcement Information

ISDA administers the rules governing dairy waste (IDAPA 02, Title 04, Chapter 14) as set forth in the 1995 Idaho Dairy Pollution Prevention Initiative Memorandum of Understanding (MOU). This MOU gives ISDA the responsibility for promulgating and enforcing rules to carry out the MOU, including developing dairy waste inspection protocols, conducting periodic inspections to ensure compliance with the Clean Water Act (CWA) and Idaho Water Quality Standards, reporting releases to U.S. waters, and approving the design and construction of dairy waste management systems as required in the Idaho Waste Management Guidelines for Confined Feeding Operations. The MOU being developed to support implementation of the Beef Cattle Environmental Control Act also defines the specific roles of ISDA, IDEQ, and EPA.

8.0 Voluntary Programs

IDEQ provides training and technical assistance to ISDA and individual dairies upon request.

9.0 Additional State-Specific Information

Cooperative Extension Service

Information about the University of Idaho Cooperative Extension Service can be found at www.uidaho.edu/ag/extension/.

Comprehensive Nutrient Management Plan (CNMP) Certification

The link between the swine and poultry certification requirements for nutrient management plans and the dairy CNMP certification program provided by ISDA is not clear. The definitions of certified planner in both regulations are the same. Information on swine and poultry certification education was not provided, and the regulation does not indicate whether the program offered by ISDA is sufficient for certification.

Memorandum of Understanding (MOU)

The Idaho Dairy Pollution Prevention Initiative Memorandum of Understanding (MOU) was developed by the Idaho Dairymen's Association, Idaho State Department of Agriculture, USEPA, and IDEQ. The MOU was established with the recognition that a formalized and efficient effort was needed to ensure that Idaho dairymen comply with the Clean Water Act and Idaho Water Quality Standards and Wastewater Treatment Standards. To prevent duplicate inspection services, the agreement recognized ISDA as the lead agency for dairy waste inspections. IDEQ, ISDA, Idaho Dairymen's Association, and USEPA are party to the MOU. A similar MOU is being developed to support implementation of the Beef Cattle Environmental Control Act. This MOU involves the ISDA, IDEQ, US EPA, and the Idaho Cattle Association.

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Illinois' CAFO Program

1.0 Background

Based upon information provided to EPA by USDA, it is estimated that there are 1,040 AFOs with from 300 to 1,000 animal units and 368 AFOs with more than 1,000 animal units in Illinois. These are primarily in the swine sector (USDA, 1999; USDA, 2000).

Since 1979 the Illinois Environmental Protection Agency (IEPA) has operated a livestock waste management program that provides for inspection of livestock facilities throughout the state (Illinois EPA 1996a). However, in response to public concerns regarding the growth of large livestock production facilities in Illinois, the Illinois General Assembly adopted the Livestock Management Facilities Act (LMFA) on May 21, 1996. Following the adoption of the LMFA, the Illinois Pollution Control Board (IPCB) and the Illinois Department of Agriculture (IDA) submitted emergency rules to address the influx of large livestock facilities to Illinois. These rules, which specifically addressed lagoon design, were adopted as part of the final permanent LMFA rules on May 20, 1997. Since its initial passage in 1996, the LMFA has been amended twice – in 1998 and in 1999.

2.0 Lead Regulatory Agency

Illinois Department of Agriculture (IDA) administers the Livestock Management Facilities Act and Illinois Environmental Protection Agency (IEPA) administers the NPDES program for CAFOs. Information about IDA and IEPA can be found at www.agr.state.il.us/ and www.epa.state.il.us/, respectively.

3.0 State Regulations Regarding AFOs/CAFOs

The NPDES requirements and livestock waste regulations are contained in the State of Illinois Rule and Regulations Title 35, Environmental Protection, Subtitle E: Agriculture Related Pollution, Chapter I: Pollution Control Board, Parts 501-506. Part 506 addresses standards for the design and construction of livestock waste handling facilities. This regulation became effective in May 1997. Title 35 also contains additional regulations pertaining to animal waste: Part 560 (Design Criteria for Field Application of Livestock Waste), Part 570 (Design and Maintenance Criteria Regarding Runoff Field Application Systems, and Part 580 (Procedures for Reporting Releases of Livestock Waste from Lagoons). In February 1999 Part 506 was amended by adding a requirement that the owner/operator of a livestock waste lagoon report any release to the environment within 24 hours to the Illinois Emergency Management Agency.

In addition there is also Title 8, Agriculture and Animals, Chapter I: Department of Agriculture, Subchapter t: Waste Management, Part 900, Livestock Management Facility Regulations. These regulations are currently being developed to implement the 1997 and 1999 revisions to the Livestock Management Facilities Act. The information below is a summary of the changes made to the LMFA that the revised rules will implement.

LMFA requirements as a result of 1998 amendments include:

- Secondary containment around waste lagoons.
- Public informational meetings for new or modified lagoon construction.
- Waste release reporting requirements for operators of livestock waste lagoons.

- Inspections of lagoons.
- Odor control enhancements for waste lagoons and other waste storage structures.

New LMFA requirements as a result of 1999 amendments:

- Filing of a notice of intent to construct forms prior to construction.
- Filing of construction plans for all waste storage structures.
- Consideration of eight siting criteria at public informational meetings.
- Siting prohibitions in environmentally sensitive areas such as floodplains, karst areas, and shallow aquifer material areas.
- Summation of animal units at commonly owned facilities for determination of applicability and compliance with waste management plan requirements.
- Phosphorus-based waste application depending on soil test values.

Revised LMFA requirements as a result of 1999 amendments:

- Expansion of the public informational requirement to include not only lagoons but also other facilities with more than 1,000 animal units.
- Inclusion of all types of waste storage structures and transportation equipment in the waste release reporting requirement.
- Waste management plans required for all operations with more than 1,000 animal units; state review and approval required for all operations with more than 5,000 animal units.
- Removal of the non-farm residence designation for residential setback determinations.

The proposed regulations for implementing these new and revised LMFA requirements were released on July 25, 2000. Information in the following sections is based upon existing regulations.

4.0 Types of Permits

NPDES

Illinois is authorized to administer the federal NPDES permitting program. Since 1992, Illinois has had a general NPDES permit for CAFOs.

Owners or operators of animal waste facilities with previously permitted discharges (before 1992 and the development of the general permit) were required to submit a Notice of Intent (NOI) to seek coverage under the general NPDES permit. Likewise, new dischargers need to apply for coverage under the general permit (Illinois Draft NPDES General Permit, 1992).

Other

In accordance with the LMFA, Illinois law requires that all new or modified livestock waste lagoons be registered with the IDA.

5.0 Permit Coverage

Facilities that discharge only in the event of a 25-year, 24-hour storm event are not required to obtain a permit.

The general NPDES permit issued in 1992 by the state of Illinois provided coverage for all AFOs already operating with an individual NPDES permit and operations that were required to have an individual NPDES permit.

The LMFA was promulgated to control waste from livestock facilities with more than 300 animal units. Illinois has adopted the federal definition of animal units.

6.0 Permit Conditions

Approvals

Owners or operators of animal waste facilities with previously permitted discharges (before 1992 and the development of the general permit) were required to submit a Notice of Intent (NOI) to seek coverage under the general NPDES permit. Likewise, new dischargers need to apply for coverage under the general permit (Illinois Draft NPDES General Permit, 1992).

Currently, managers of livestock facilities must obtain a registration certificate from the IDA to build a livestock waste management facility designed to contain 300 or more animal units. IDA requires that all sites must be inspected by a registered professional engineer (Illinois EPA, 1996b).

Lagoon Design and Specifications

New facilities designed for more than 300 animal units, or facilities modified to exceed 300 animal units, that have not placed manure in lagoons are required to investigate the soil below the lagoon site under the supervision of a registered professional engineer. The facility operator must take steps (i.e., installing clay or synthetic liners) to protect any aquifer within 50 feet of the lagoon bottom.

Waste lagoon design standards (as described in 35 ILCS 506 Subpart B) must follow the design specifications of either the American Society of Agricultural Engineers or the Natural Resources Conservation Service. The IDA, however, may impose extra requirements when protection of ground water is a concern.

Liner requirements are determined based on the distance from the bottom of the waste lagoon to the ground water aquifer. If the distance between the aquifer and the lagoon is less than 20 feet, a liner and ground water monitoring are required. A liner, but not monitoring, is required for lagoons with bottoms 20 to 50 feet from a ground water aquifer. There are no liner or monitoring requirements for lagoons with a 50-foot distance between ground water and the lagoon bottom.

A minimum of 1 foot of freeboard is required for facilities with less than 300 animal units. Animal feeding operations with 300 or more animal units must maintain 2 feet of freeboard.

The minimum berm width for lagoons is 8 feet, and the slope may not be steeper than 3:1.

Lagoon capacity must be in accordance with subsection 5.4.1.1, ASAE EP403.2, ASAE Standards 1993, pp. 543-545. Livestock waste volume must be sufficient to store the waste generated by the facility for at least 270 days. Runoff and wash-down volumes are to be calculated based on a 6-inch rainfall covering the lagoon surface and any other areas such as open lots, roofs, or other surfaces where collected precipitation is directed to the lagoon in

addition to any wash-down water used by the operation.

Lagoons must have a liquid level board or staff gauge.

New or modified lagoons must add water up to at least 60 percent of design volume before any waste is added.

Modifications to the requirements can be made to meet site-specific objectives if they can be demonstrated to be as effective as the established standards. The state authority must approve them.

Discharge Rules

No discharges are allowed except those caused by catastrophic storm events. Livestock waste handling facilities must be maintained to contain the precipitation and runoff from a 25-year, 24-hour storm event.

Waste Management Plans

Waste Management Plans must be developed based on proper application of livestock waste at rates not to exceed the agronomic nitrogen demand of the crops to be grown when averaged over a 5-year period. Plans are required for all facilities with 1,000 to 7,000 animal units. Operations with fewer than 1,000 animal units do not need a waste management plan. These plans must be maintained on file at the livestock management facility and must be available for inspection by IDA personnel. AFOs with more than 7,000 animal units must prepare a waste management plan approved by the IDA before operating for new facilities and within 60 days for existing facilities. All waste disposal records must be maintained for 3 years.

The waste management plan must contain the following items:

- An estimate of the annual volume of waste to be disposed of.
- The number of acres available for disposal.
- An estimate of the nutrient value of the waste.
- An indication that livestock waste will be applied agronomically based on nitrogen demands of the crops to be grown.
- An indication that livestock waste applied within 1/4 mile of any residence will be incorporated on the day of application.
- A provision that waste will not be applied within 200 feet of surface water unless the water is upgrade and that waste will not be applied within 150 feet of potable water supply wells.
- A provision that prevents the application of waste within the 10-year floodplain unless injection or incorporation is used.
- A provision that allows waste disposal on frozen or snow-covered ground only if land slopes are 5 percent or less or adequate erosion control practices are in place.
- Methods for animal disposal.

Separation Distances

AFOs with 50 to 999 animal units must be 1/4 mile (1,320 feet) from the nearest occupied non-farm residence and 1/2 mile (2,640 feet) from populated areas. CAFOs with 1,000 to 7,000 animal units must be an additional 220 feet beyond the 1/4 mile limit from residences for every

1,000 animal units above 1,000. Also, CAFOs with 1,000 to 7,000 animal units must be an additional 440 feet beyond the ½-mile limit from populated areas for every 1,000 animal units above 1,000 (IDA, 1997).

Land Application Requirements

Waste should be applied at agronomic rates based on the nitrogen needs of crops, and any land application of wastes requires that wastes be assimilated into the land to prevent discharges to waters of the state (Illinois Draft NPDES General Permit, 1992).

Other Permit Conditions

A livestock waste handling facility with 300 to 1,000 or more animal units must be operated under the supervision of a certified livestock manager. Certification can be obtained by attending a training session sponsored by the IDA or by successfully completing an exam. AFOs with more than 1,000 animal units must be operated under the supervision of a certified livestock manager who has attended a training session **and** passed a written competency examination. Also, owners of new or modified lagoons registered under the requirements of the CWA must provide evidence of financial responsibility for lagoon closures.

7.0 Enforcement Information

General Enforcement Information

If a facility fails to register its waste lagoons, the IDA may issue a notice that allows the facility 10 working days after receipt of the notice to register and certify the lagoon. If the owner or operator does not comply with the notice the IDA can issue a cease and desist order.

Other enforcement actions include the following (IDA, 1997):

- If the lagoon is not constructed in accordance with the rules, fines of not more than \$5,000 may be levied.
- Failure to prepare, maintain, and implement a waste management plan draws a warning letter from the IDA for the first violation. If the problem has not been corrected after 30 days, the facility is fined up to \$500 and has to enter into an agreement with IDA to prepare, maintain, and implement a plan. Operational cease and desist orders follow if the owner or operator does not comply or refuses to enter into agreement. Similar actions are taken when livestock managers violate certification requirements.
- If an operation violates the setback rules, the IDA may issue a cease and desist order to prevent livestock from entering into the livestock management facility and prohibit use of the waste management facility, or IDA may issue a cease and desist order. The cease and desist orders can be canceled when the facility comes into compliance.

General Inspection Information

From 1985 to 1994 IEPA conducted an average of 222 inspections per year and found that 67 percent of livestock facilities inspected required corrective actions. In 1994, 106 of 228 inspections were prompted by citizen complaints. Also in 1994, 129 inspections were recorded

as first-time visits (IEPA, 1996a). Most complaints were about odor problems. In 1996 IEPA conducted 285 inspections.

As a condition of the current livestock waste lagoon registration process, IDA may conduct periodic site inspections to ensure compliance. IDA is authorized to conduct inspections anytime during the development process and in response to complaints. All new or modified waste lagoons must be inspected by the operator under the direction of a licensed professional engineer.

8.0 Voluntary Programs

The only incentives offered to CAFO operators are the incentives offered through the federal EQIP program.

9.0 Additional State-Specific Information

Cooperative Extension Service

Information about the University of Illinois Cooperative Extension can be found at www.extension.uiuc.edu/welcome.html.

Comprehensive Nutrient Management Plan (CNMP) Certification

Illinois does not have a CNMP certification program, but all livestock waste handling facilities serving 300 or more animal units must be operated by a "Certified Livestock Manager." Managers of facilities with 300 to 999 animal units can become certified in one of two ways: by attending an approved training course or by passing a proficiency exam. Managers of facilities with 1,000 or more animal units must attend the training course and pass the exam.

Other Information

Illinois is one of the few states that requires registered operators of CAFOs to provide proof of financial responsibility (through insurance, surety bond, or other form of guarantee) for the closure of lagoons and proper disposal of their contents if the facility were to stop operations (IDA, 1997).

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Indiana's CAFO Program

1.0 Background

Based upon information provided to EPA by USDA it is estimated that there are 934 AFOs with 300 to 1,000 animal units and 320 AFOs with more than 1,000 animal units in Indiana (USDA, 1999; USDA, 2000).

Indiana has developed a workgroup, consisting of members from government, agriculture, environmental groups, and citizen groups, to draft state regulations for confined feeding operations. The May 5, 2000, draft of these proposed regulations may be viewed at www.state.in.us/idem/olq/special_topics/confined_feeding/cfo_draft_rule.pdf.

2.0 Lead Regulatory Agency

The Indiana Department of Environmental Management (IDEM) is responsible for developing rules related to CAFOs. More information about IDEM can be found at www.state.in.us/idem/.

3.0 State Regulations Regarding AFOs/CAFOs

The Indiana Confined Feeding Control Law, Indiana Code 13-18-10, requires CAFOs to receive approval from IDEM of plans for waste treatment control facilities. CAFOs must also obey the rules of the Indiana Water Pollution Control Law, Indiana Code 13-1-3. There are no wetland, water use, air quality, or other environmental regulations related to CAFOs (NASDA, 1997).

4.0 Types of Permits

NPDES

Indiana is authorized to issue NPDES permits to CAFOs, but has elected not to issue any permits under the NPDES program. The need for such a permit is based on an on-site inspection that determines whether a permit is required based on (1) the number of animals, per category, housed at a facility; (2) whether pollutants from the facility are discharged into the waters of the state through a man-made ditch or flushing system; or (3) whether pollutants that originated outside the facility but pass over, across, or through it are discharged directly into the waters of the state. Otherwise, the disposal of wastes generated at such a facility is regulated as a solid waste under the Confined Feeding Program administered by the IDEM Office of Solid and Hazardous Waste (OSHW) Land Use Branch.

Other

There are no state permits, but anyone proposing to construct or expand a confined feeding operation must first apply for and obtain approval from IDEM prior to construction. Approval is also required for existing operations that have never been approved. In addition to the application form, the applicant must submit design and operation plans for the manure treatment and control facilities, a manure management plan, and the application fee. Proposed construction on undeveloped land also requires that the applicant notify the persons who own adjoining properties, the occupants of the adjoining land, and county executives.

5.0 Permit Coverage

State approvals are required for confined feeding operations, which are defined as any livestock operation with more than 300 cattle, or 600 swine or sheep, or 30,000 poultry or an animal feeding operation that causes a violation of (1) water pollution control laws, (2) any rules of the water pollution control board, or (3) the Indiana Code confined feeding statute (IC 13-18-10).

6.0 Permit Conditions

Approvals

Upon receipt of the application, IDEM will notify the County Board of Commissioners, Mayor, or Town Council President of any county, city, or town that is affected by the application. IDEM has 90 days to issue a decision regarding a confined feeding operation application. After the approval decision is made, IDEM will notify the applicant and potentially affected parties of the decision. Potentially affected parties will have 18 days to appeal the decision. If approved, construction of the confined feeding operation must begin no later than 2 years and be completed no later than 4 years after the approval has been issued or after all appeals have been settled.

Lagoon Design and Specifications

Standards are in place for waste structure design. Lagoons must be designed with a professional engineer or with certified personnel from the USDA Natural Resources Conservation Service (NRCS). Facilities constructed before July 1, 1993, must provide a minimum 90-day storage. Newer structures must have a minimum 120-day holding capacity (Jones and Sutton, 1996). The storage structure should have a 2-foot freeboard and be able to control wastes during a 25-year storm event. Two-foot compacted clay/bentonite or synthetic liner materials are acceptable. Allowable lagoon seepage is evaluated as part of the construction plan. Designs must comply with other state ground water pollution laws (NASDA, 1997).

Discharge Rules

No information was found in publically available sources.

Waste Management Plans

According to Indiana Code 13-18-10-2.3, operations have to resubmit manure management plans every 5 years for the letter of approval to remain valid.

Separation Distances

There are no specific state standards regarding separation distance from dwellings or property lines. Draft Rule 327 IAC 16-10-4 on confined feeding operations contains specific manure application setback distances for such specific features as public water supplies and wells, surface waters, sinkholes, property lines, and public roads. The draft rule was distributed for review and comment on May 5, 2000. These proposed regulations may be viewed at www.state.in.us/idem/olq/special_topics/confined_feeding/cfo_draft_rule.pdf.

Land Application Requirements

Draft Rule 327 IAC 16 Rule 10 on confined feeding operations contains specific land application requirements. The draft rule was distributed for review and comment on May 5, 2000. These proposed regulations may be viewed at www.state.in.us/idem/olq/special_topics/confined_feeding/cfo_draft_rule.pdf.

7.0 Enforcement Information

The IDEM Office of Enforcement is responsible for ensuring that individuals, businesses, and government entities are in compliance with Indiana's environmental laws. The Office uses enforcement to bring facilities into compliance, deter future noncompliance, and improve the environment. Violators are identified through complaints. Violators are referred to the Office of Enforcement only when other strategies used by the offices that detected violations are not successful in getting serious violations corrected (IDEM Office of Enforcement, n.d.).

IDEM has the authority to levy fines (USEPA/State Feedlot Workgroup, 1993; IDEM Office of Enforcement, n.d.).

The Office of Enforcement may send a Notice of Violation (NOV) to a violating facility that gives the respondent the opportunity to discuss violations and solutions through a conference. The Office and the respondent may also develop an Agreed Order which gives the respondent 60 days to outline steps that the respondent must take to come into compliance with the law. The respondent may be fined for prior noncompliance and for not meeting any of the required steps outlined under the Agreed Order. Alternatively, a Commissioner's Order requires a specific action to correct a violation and/or payment of a fine. Finally, the Office of Enforcement may levy fines up to \$25,000 per day per violation. The magnitude of the fine depends on the extent of the violation, potential harm to human health and the environment (major, moderate, minor), economic gain by the violator for noncompliance, and the violator's effort to achieve compliance. IDEM may also give penalties up to \$10,000 for violation of filing or reporting requirements (USEPA/State Feedlot Workgroup, 1993; IDEM Office of Enforcement).

There are routine on-site inspections of CAFOs (although initial inspections were not required until at least 1996). Fish kill reports, complaints, or contact with agriculture lenders were used to identify nonpermitted CAFOs.

8.0 Voluntary Programs

IDEM is authorized to take the lead in the development of technical and compliance assistance programs for CAFO operators. The programs may be administered by the Department, a college or university, or a contractor.

IDEM created the Compliance and Technical Assistance Program (CTAP) to help the regulated community to achieve compliance and to encourage cooperation among IDEM, businesses, and the community.

9.0 Additional State-Specific Information

Cooperative Extension Service

Information about the Purdue University Cooperative Extension Service and the Purdue University National Extension Water Quality Database can be found at http://hermes.ecn.purdue.edu:8001/http_dir/acad/agr/extn/extn.html and <http://hermes.ecn.purdue.edu:8001/server/water/water.html>, respectively.

Comprehensive Nutrient Management Plan (CNMP) Certification

No CNMP certification programs are in place in Indiana. Draft rules proposed in May 2000 do not contain a certification provision.

Other Information

The Water Pollution Control Board plays a role in protecting the environment from CAFO related pollution. IDEM-Soil Conservation Service (SCS) assists the CAFO program with reviewing the technical requirements for CAFOs and by responding to complaints. The county board of health also may work cooperatively with the CAFO program on complaint response.

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Iowa's CAFO Program

1.0 Background

Based upon information provided to EPA by USDA it is estimated that there are 3,160 AFOs with 300 to 1,000 animal units and 1,290 AFOs with more than 1,000 animal units in Iowa. These are primarily in the swine sector (USDA, 1999; USDA, 2000).

The Iowa Department of Natural Resources (IDNR) has had a livestock permitting program since 1972 and has administered the NPDES program since 1978 (USEPA, 1998).

2.0 Lead Regulatory Agency

Iowa's Department of Natural Resources (IDNR), Environmental Protection Division (EPD), Water Quality Bureau, Wastewater Section administers state and federal laws that regulate the construction and operation of confinement feeding operations. The Wastewater Section also issues discharge or operation permits under delegation of the NPDES permit program. State operation permits rather than NPDES permits may be required for systems that land apply wastewater. Information about Iowa's program for Confinement Feeding Operations is available at: www.state.ia.us/epd/wastewtr/feedlot/feedlt.htm.

3.0 State Regulations Regarding AFOs/CAFOs

Pursuant to the authority of Iowa Code section 455B.173(12); 1995 Iowa Acts, Chapter 195, section 37; and 1997 Iowa Acts, S.F. 473, section 12, the Iowa Environmental Protection Commission adopted Chapter 65, "Animal Feeding Operations," to address waste disposal and the design of waste disposal systems for animal feeding operations. Chapter 65 provides detailed guidance on the requirements AFOs must follow when submitting applications and operating waste control systems.

Iowa's "Manure Law," passed in 1995 as the Livestock Regulation Act (House File 519), prohibits the discharge of manure directly into a water of the state or into a drain or drainage ditch that discharges directly to state waters. As such, confined feeding operations must retain all manure produced between periods of disposal and dispose of manure so as not to cause ground water or surface water pollution. The Manure Law addressed four major components that affect livestock operations:

- Financial assurance for closures
- Air quality (i.e., separation distances)
- Water quality
- Nuisance defense

4.0 Types of Permits

NPDES

Iowa has authority to issue NPDES permits.

Other

Confinement operations that meet specific criteria must obtain a construction permit from IDNR prior to beginning construction of the confinement buildings, construction or installation of manure storage structures, or facility modifications that increase the number of animals or change the volume or manner in which manure is stored in the operation (IDNR, 2000a).

Iowa requires livestock facilities (i.e., open feedlots and confinement feeding operations) that use waste control systems to obtain operating permits and construction permits. An operating permit, rather than an NPDES permit, may be required for those facilities that land apply wastes (IDNR, 1997).

5.0 Permit Coverage

Confinement Feeding Operations

Confinement feeding operations will need to obtain a construction permit if (IDNR, 2000a):

- The facility will use an anaerobic lagoon or earthen manure storage basin and the facility is designed for an animal weight capacity greater than:
 - 400,000 pounds bovine
 - 200,000 pounds for other animal species
- The facility will use formed manure storage structures (including tanks made of concrete, concrete block, wood, or steel) and the facility is designed to have an animal capacity equal to or greater than:
 - 1,600,000 pounds bovine
 - 625,000 pounds for other animal species
- The facility will store manure exclusively in a dry form and the facility is designed for an animal weight capacity equal to or greater than:
 - 4,000,000 pounds bovine
 - 1,250,000 pounds for other animal species
- The facility will use an egg washwater structure and their animal weight capacity exceeds 200,000 pounds.

Water Withdrawal Permit

If a livestock operation will be withdrawing more than 25,000 gallons of water per day, the owner must apply for a water withdrawal permit. Permitted withdrawals are subject to limitations in use during times of low flow to protect streams and higher priority water uses. In times of drought, other measures could apply that would further restrict the water supply of a feeding operation. If the use of water interferes with a neighbor's use of the aquifer, well interference procedures could call for restrictions on use or compensation of affected landowners (IDNR, 2000b).

Open Feedlot Requirements

IDNR defines open feedlots as unroofed or partially roofed animal feeding operations in which

no crop, vegetation, or forage growth is maintained during the period that animals are confined. These operations must obtain operating permits under the following conditions:

- An open feedlot with a capacity that exceeds 1,000 beef cattle, 700 dairy cattle, 2,500 butcher and breeding swine, 10,000 sheep and lambs, 55,000 turkeys, 500 horses, or 1,000 total animal units.
- An open feedlot that discharges wastes directly into water of the state or through a manmade conveyance and the feedlot's capacity exceeds 300 beef cattle, 200 dairy cattle, 750 butcher and breeding swine, 3,000 sheep and lambs, 16,500 turkeys, 30,000 broiler or layer chickens, 150 horses, or 300 total animal units.
- Any open feedlot that the Department of Natural Resources determines is in need of an operating permit following a site inspection.

Confinement feeding operations, defined as totally roofed animal feeding operations that store or remove waste as a liquid or semi-liquid, must collect and store all wastes between periods of disposal and dispose of stored wastes by land application. Direct discharges from feeding operations are prohibited, and all wastes removed from a confinement feeding operation must be disposed of in a manner that does not cause surface water or ground water pollution. In general, confinement feeding operations do not require an operating permit unless one is specifically requested by the Department of Natural Resources (IDNR, 1992).

6.0 Permit Conditions

Approvals

Approval is required for construction and operation of animal feeding operations based on the capacity of the facility. An individual NPDES permit may also be required if the facility is considered a CAFO.

Lagoon Design and Specifications

Iowa requires that lagoons and earthen waste storage basins be constructed to prevent seepage from exceeding 1/16 inch per day and that freeboard capacity be maintained at 2 feet (NASDA, 1997). Soil borings are required prior to constructing waste lagoons. Although monitoring is not routinely required, EPD can require case-by-case monitoring for sites considered to have potential for polluting ground water.

Discharge Rules

All open feedlot facilities are prohibited from direct discharges and must control discharges from precipitation up to the largest 25-year, 24-hour storm event (IDNR, 1992).

Water pollution control requirements for animal feeding operations are given in Chapter 65 of the rules of the Iowa Department of Natural Resources. Under these rules, open feedlots meeting the operation permit application requirements of subrules 65.3(1) or 65.3(2) must also comply with the minimum manure control requirements of subrule 65.2(2). Subrule 65.2(2) requires that all feedlot runoff and other manure flows resulting from precipitation events less than or equal to the 25-year, 24-hour rainfall event be collected and land applied.

Waste Management Plans

Iowa law requires a manure management plan for confinement feeding operations that meet any of the following criteria (IDNR, 2000d):

- There is an animal weight capacity of more than 400,000 pounds of cattle or more than 200,000 pounds of other animals and the operation was constructed or expanded after May 31, 1985.
- The operation applied for and obtained a construction permit after May 31, 1985.
- A person applies manure from a confinement feeding operation located outside of Iowa on land in Iowa (does not apply if the operation's capacity is less than 400,000 pounds for cattle or 200,000 pounds for other animal species).

Manure management plans are not required for open feedlots. Owners of both feedlots and confinement operations must file a manure management plan for the confinement operation if the confinement facilities have an animal weight capacity of more than 400,000 pounds for cattle or 200,000 pounds for other animal species.

Manure management plans must be kept on-site and available for inspection by Iowa officials. Inspection records must be maintained and methods for manure application and disposal must be identified (ASIWPCA, 1997).

Separation Distances

Separation distances have been established between proposed CAFOs and neighboring residences, churches, schools, businesses, and public use areas. Separation distances also exist for wells, sinkholes, lakes, rivers, and streams. These distance requirements vary with the size of the operation, type of animal raised, and type of manure storage facility used (IDNR, 2000a).

The following lists the minimum separation distances required between animal feeding operation structures and buildings or public use areas. These requirements do not apply to animal feeding operation structures that store manure exclusively in a dry form. These distances apply to new construction beginning January 1, 1999. These tables are available at www.state.ia.us/dnr/organiza/epd/wastewtr/feedlot/sep.htm (IDNR, 2000c).

- Required Separation Distances—Swine, Sheep, Horses, and Poultry
- Required Separation Distances—Beef and Dairy Cattle
- Required Separation Distances from Wells—includes minimum separation distances required for all new or expanding storage structures built after March 20, 1996.
- Required Separation Distances from Surface Waters and Ground Water—includes minimum separation distances required for all animal feeding operation structures, regardless of size. Distances are effective for new construction beginning January 1, 1999.

Land Application Requirements

Iowa law requires that all manure from an animal feeding operation be land applied in a manner that will not cause surface water or ground water pollution. Chapter 65 of the Iowa Administrative Code contains rules that govern land application of manure, including the

separation distances. Distances apply to the type of manure and the method of application that is used (IDNR, 2000e).

Land application is not recommended on frozen or snow-covered ground unless absolutely needed and should be restricted to areas with 4 percent slopes or less. If wastes are disposed of on land subject to flooding (i.e., within the 10-year floodplain), the manure should be incorporated into the soil (IDNR, 1992). Before land application is allowed, the waste management plan must show that sufficient land is available for manure application so as not to exceed the nitrogen requirements of crops (ASIWPCA, 1997).

Self-Monitoring Requirements

Self-monitoring requirements may be imposed on AFOs with an operation permit. These requirements could require operators to measure the liquid level on a periodic basis and sample and analyze the ground water to determine the effects of wastewater application.

7.0 Enforcement Information

No information was found in publically available sources.

8.0 Voluntary Programs

Iowa State University hosts a manure education program for manure applicators and nutrient management planning for producers. Information on the education program is available on the Iowa Manure Management Action Group (IMMAG) Internet site.

The IMMAG Internet site is provided by Iowa State University Extension Service and the College of Agriculture. It is funded by the USDA NRCS and provides information about manure management and nutrient management. The Internet site has a list of manure management planners, engineering consultants, and soil and manure testing labs, as well as a Commercial Manure Applicator Directory and contact information for the Iowa Independent Crop Consultants Association. The Internet site also contains information on who is required to file a manure management plan and information on the permits required (IA State University Extension, 2000).

9.0 Additional State-Specific Information

Cooperative Extension Service

Information regarding the Iowa State University Extension Service can be found at www.exnet.iastate.edu. The Iowa Manure Management Action Group's Internet site, located at <http://extension.agron.iastate.edu/immag/>, is the predominant site for Iowa residents to obtain information regarding animal feeding operations. This site contains information such as manure plans and permits and manure education programs. The Extension Service website contains various publications such as the Design and Management of Anaerobic Lagoons in Iowa for Animal Manure Storage and Treatment.

Comprehensive Nutrient Management Plan (CNMP) Certification

Iowa does not have a CNMP preparer certification program. However, Iowa Administrative

Code, Chapter 65, section 17, requires that manure management plans for CAFOs be submitted to the IDNR/EPD for approval.

Construction of CAFO manure storage structures requires a certified Professional Engineer to ensure that the construction permit is in accordance with design plans; it also requires that construction be supervised by a Professional Engineer and inspected by a Professional Engineer (Chapter 65, section 18).

Under Iowa Administrative Code, Chapter 65, section 19, commercial manure applicators and confinement site manure applicators cannot apply dry or liquid manure to land unless they are certified. Iowa law defines a commercial manure applicator as a person who engages in the business of and charges a fee for applying manure to the land of another person (Chapter 65, section 19). All commercial manure applicators should have been certified by July 1999. To receive and maintain the certification, an applicant must pass a written exam or receive 3 hours of continuing education each year. Commercial manure applicator certification is valid for only 1 year (IA State University Extension, 2000).

Iowa law defines a confinement site manure applicator as a person who applies manure stored at a confinement site and is not a commercial manure applicator (567-65.19). A confinement site is a site where there is a manure storage structure that is part of a confinement feeding operation. Confinement site certification is required for confinement feeding operations that exceed an animal weight capacity of 200,000 pounds for animals other than bovine and 400,000 pounds for bovine animals. Confinement site applicators include full-time employees of confinement feeding operations whose primary responsibility is manure application. All confinement site manure applicators should have been certified by October 1999. Certification for confinement site applicators is for 3 years. To receive and maintain certification, an applicator must take an examination every 3 years or attend 2 hours of continuing education every year (IA State University Extension, 2000).

Case Studies/Innovative Programs

Iowa law (1995 Livestock Regulation Act, House File 519) created the Manure Storage Indemnity Fund to assist with site cleanups at abandoned confinement feeding operations under county control. The fund provides money to clean up abandoned sites when other funding sources are not available. Money for the fund comes from fines collected by the Iowa Department of Natural Resources from confined feeding operations and a one-time fee associated with construction of a confined feeding operation.

Chapter 65, "Animal Feeding Operations," specifically allows for county participation in site inspections and the construction permit application review process under 65.10(455B). Construction permits for CAFOs must be sent to the county for review and a county representative may accompany state officials during an inspection.

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Kansas's CAFO Program

1.0 Background

Based upon information provided to EPA by USDA it is estimated that there are 335 AFOs with from 300 to 1,000 animal units and 270 AFOs with more than 1,000 animal units in Kansas. These are primarily in the beef sector (USDA, 1999; USDA, 2000).

The Kansas Department of Health and Environment (KDHE) has regulated feedlots since 1968 (USEPA, 1998). Traditionally, the program has focused on large cattle feeding operations, but within the last few years, the emphasis has shifted to large hog operations. In 1998, the state legislature passed a swine facility environmental regulation package that required new nutrient management planning for large facilities (USEPA, 1998; KSDOA, 2000b).

2.0 Lead Regulatory Agency

The KDHE Bureau of Water has regulatory authority over livestock operations with more than 300 animal units and any and all facilities with significant potential to pollute regardless of animal unit capacity (KDHE, 2000f).

Pursuant to KSA 47-1503, the Kansas Animal Health Department requires an operating license for feedlot facilities. The Animal Health Department defines a feedlot as a livestock feedlot or feed yard having more than 1,000 head of livestock at one time during the license year or any other livestock feedlot whose operator elects to come under the act. The definition includes lots or pens that are not normally used for raising crops and in which no vegetation, intended for livestock feed, is growing. Swine and dairy confinement facilities are included (KS Department of Animal Health, 2000).

The Kansas Department of Agriculture (KSDOA) administers a nutrient management program created by the passage of HB 2950 during the 1998 legislature. The law requires facilities with 1,000 or more animal units of swine to prepare a plan for the utilization of the generated waste. These facilities must also monitor land application of this material to protect the quality of the ground water and surface waters of Kansas and to ensure that applications are not more than the holding capacities of the soil or the abilities of the crops to utilize the nutrients (KSDOA, 2000b).

3.0 State Regulations Regarding AFOs/CAFOs

Any facility with an animal unit capacity greater than 300 or more must register with KDHE. Any facility with an animal unit capacity of 1,000 or more must obtain a Livestock Waste Management Permit. Additionally, any facility that presents a significant water pollution potential, as determined by KDHE, must obtain a permit (KDHE, 2000e).

New regulations require new facilities to submit plans for review and approval that must document manure management, odor control, nutrient control and utilization, and separation distance for facilities with more than 1,000 animal units. Facilities with greater than 3,724 animal units must also provide plans for facility closure and financial assurance. The new regulations also require a higher level of public participation for waste control permits issued to new livestock facilities (KDHE, 2000c).

HB 2950, located at www.kdhe.state.ks.us/feedlots/hb2950.htm, comprises of statutes applicable to the Livestock Waste Management Program. KAR 28-16-56c and 56d regulate sewage permit fees and definitions and are located at www.kdhe.state.ks.us/feedlots/reg28-16.htm. Animal and related waste control is regulated by KAR 28-18-1 to -15 and can be found at www.kdhe.state.ks.us/feedlots/reg28_18.htm. Swine and related waste control is regulated by KAR 28-18a-1 to -32 and can be found at www.kdhe.state.ks.us/feedlots/reg28_18a.htm. KAR 28-29-25d regulates livestock composting and is found at www.kdhe.state.ks.us/feedlots/KAR28_29_25d.htm.

4.0 Types of Permits

NPDES

Kansas is authorized to administer the NPDES permitting program and issues individual NPDES permits to livestock facilities with capacities exceeding 1,000 animal units as defined by federal regulation (KDHE, 2000f).

Other

Construction and operating permits are required for any new or expanding livestock operations with the capacity for 300 animal units (i.e., 300 animals) (Agena, 1994). Small facilities (less than 300 animal units) are issued Certificates of Compliance if they do not pose a threat to waters of the state; however, they are not required to register with the state of Kansas.

5.0 Permit Coverage

Confined feeding facilities must register with KDHE if the facility meets any of the following conditions (KDHE, 2000f):

- The facility has an animal unit capacity of 300 or more animal units.
- KDHE determined that the facility has significant water pollution potential.
- KDHE determined that the facility requires a permit.
- The operator of the facility volunteered to come under state permitting regulations.

Each operator must submit to KDHE a water pollution control permit application for a confined feeding facility that meets any of the following criteria (KDHE, 2000f):

- Determined by the secretary to present a significant water pollution potential, regardless of size.
- Has an animal unit capacity of 300 or more and is determined to present a significant water pollution potential.
- Has an animal unit capacity of 1,000 or more, regardless of water pollution potential.
- Proposed construction, expansion, modification, or change in operation of an existing permitted confined feeding facility.
- Proposed construction, expansion, modification, or change in operation of an existing certified confined feeding facility, where KDHE determined that the proposed changes in operation represent a significant water pollution potential.
- Each sale barn, collection center, or transfer station that has an average weekly capacity of more than 300 animal units or that is utilized more frequently than once per week or is determined to be a significant water pollution potential.
- Each livestock truck wash facility. For the purpose of these regulations, only those facilities

- that wash trucks used to transport animals or livestock must be included.
- Operator of an animal feeding operation that elects to obtain a permit.

6.0 Permit Conditions

Approvals

If a confined feeding facility represents a significant water pollution potential or requires a permit, as determined by the department, the operator must provide a swine waste management or pollution control system that should be designed in accordance with minimum standards of design, construction, and maintenance and constructed and operated in accordance with construction plans, specifications, and manure management plan approved by the department (KDHE, 2000g).

House Bill 2219, passed during the session of 1997, stated that all plans and specifications submitted to the department for new construction or new expansion of confined feeding facilities may be, but are not required to be, prepared by a Professional Engineer or a consultant (KDHE, 2000a).

Lagoon Design and Specifications

Kansas has set seepage limits for lagoons and earthen basins at ¼ inch per day (Agena, 1994). KDHE is to be notified whenever the freeboard of a lagoon falls below 2 feet. The bottom of waste lagoons must be at least 10 feet above the ground water aquifer, unless measures are taken to ensure that leakage will not reach ground water (ASIWPCA, 1997). The Swine Facility Law (House Bill 2950) has reduced the allowable seepage limit for swine facilities with more than 3,725 animal units to ⅛ inch per day (KDHE, 2000b).

Discharge Rules

Animal wastes from a waste-retention lagoon or pond or other storage structure may be discharged to surface waters of the state if a chronic or catastrophic rain event caused an overflow. The waste management or pollution control system must be designed, constructed, operated, and maintained to contain all wastes, plus the direct precipitation and runoff from a 25-year, 24-hour precipitation event for the location of the confined feeding facility (KDHE, 2000f and 2000g).

Waste Management Plans

Swine facilities with an animal unit capacity of 1,000 animal units or more are required to submit a manure management plan and a nutrient utilization plan for a facility that applies manure or wastewater to land, as required by the Secretary of the KSDOA (KDHE, 2000g).

Separation Distances

New livestock feeding operations with a capacity below 299 animal units have no separation requirements. Facilities with 300 to 999 animal units must be at least 320 feet from residences. Larger capacity feeding operations must be at least 4,000 feet from residences. Animal feeding operations must be 100 feet from property lines and water wells (ASIWPCA, 1997). Additional

separation distances are cited in H.B. 2950, Section 1, at www.kdhe.state.ks.us/feedlots/hb2950.htm#sec1%20ksa.

Land Application Requirements

Land applications of livestock wastes are to be based on meeting the agronomic nitrogen needs of the crops being fertilized. If soil testing is not conducted, land application is restricted to no more than 250 pounds per acre of nitrogen. Application is to be conducted so that no ponding or puddling occurs, and wastes should not be applied to highly erodible land. Application must be 100 feet from water wells, 660 feet from residences, and 200 feet from waterways. Wastes should not be applied on frozen ground or during precipitation. Suitable days for dewatering and disposal should be preceded by 3 days with less than 0.05 inch of rainfall per day and average temperatures above freezing (ASIWPCA, 1997).

7.0 Enforcement Information

Staff at KDHE rely on reports of fish kills or complaints to conduct enforcement inspections (USEPA, 1993). While KDHE can initiate investigations and report permit violations, officials prefer to work with livestock operators to resolve problems. The State Attorney General has the authority to levy fines under the Kansas Wastewater Discharge Control Law (Section 65-167). Penalties of between \$2,500 and \$25,000 will be assessed for willful or negligent discharges of sewage into state waters without a permit. Civil penalties of up to \$10,000 can be levied for violations of the following:

- Sewage discharge permits
- Effluent or water quality standards
- Filing requirements
- Reporting, inspection, or monitoring requirements
- Orders from the Secretary of Health and Environment

Enforcement action against those who overapply wastes to agricultural lands is unlikely to be successful unless it could be demonstrated that water quality problems were clearly attributable to overapplication (Agena, 1994).

Inspection Programs

The permitting process requires an initial site visit by KDHE before the applicant submits a permit application. A post-construction inspection is required to ensure that the facility followed the approved design plans for waste structures. NPDES-permitted facilities are inspected annually. If a facility has a poor waste management record, it will be inspected every 6 months. Facilities with good waste management practices will be inspected every 2 years.

State-permitted facilities are inspected at least once during the duration of the permit. In accordance with the Swine Facility Law, KDHE must inspect facilities with more than 3,725 animal units annually. Facilities with 1,000 to 3,725 animal units must be inspected every 2 years, and facilities with less than 1,000 animal units must be inspected every 5 years. Problem facilities must be inspected every 6 months until the problems are corrected (KDHE, 1998).

8.0 Voluntary Programs

Within the Bureau of Water, the Nonpoint Source Section implements section 319 of the Clean Water Act and coordinates the programs designed to eliminate nonpoint source pollution.

9.0 Additional State-Specific Information

Cooperative Extension Service

The Kansas State University Research and Extension program is located at www.oznet.ksu.edu/, the College of Agriculture program at Kansas State University is located at www.oznet.ksu.edu/coa/, and the Department of Animal Sciences and Industry has information available at www.oznet.ksu.edu/dp_ansi/.

Comprehensive Nutrient Management Plan (CNMP) Certification

Kansas does not have a CNMP preparer certification program. Kansas Administrative Regulation 28-18a-13 requires a new or an existing swine facility to develop and implement a manure management plan that must be approved by KDHE. New or existing swine facilities using land application must develop a nutrient utilization plan and submit this plan to KDHE (KAR 28-18a-14).

Under Kansas Administrative Regulation, Article 28-18a-26, KDHE must adopt rules and regulations establishing standards for training and certification, along with continuing education or re-certification of swine facility operators maintaining or supervising a swine waste management system or a swine facility.

A swine facility operation with an animal unit capacity of 1,000 or more that is required to have a permit must also obtain a swine waste management and pollution control system operator certificate (28-18a-26). Certification is required for swine facility operators who maintain or supervise a swine waste management or pollution control system. The training program ensures that swine operators are knowledgeable in the following (KDHE, 2000e):

- Management of manure and wastewater
- Nutrient utilization planning and implementation
- Emergency response planning

To obtain the swine facility operator certificate, an operator must complete 6 hours of training (as approved by KDHE) and pass a written examination (28-18a-27, 28-18a-28). Certified swine facility operators should complete a minimum of 6 hours of approved training every 5 years for renewal of the certificate (28-18a-30).

Noncertified operators of swine facilities with an animal unit capacity of 1,000 or more must notify KDHE within 30 days of the startup of the facility. The operator will be designated an "operator in training." Operators that are in training must complete 6 hours of training and must obtain certification within 1 year (28-18a-29).

Case Studies/Innovative Programs

Kansas's Swine Facility Law serves to further regulate large swine CAFOs. Environmental

protection measures beyond the NPDES requirements are mandated for CAFOs with more than 3,725 animal units, including increased inspection and additional setback requirements (KDHE, 1998).

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Kentucky's CAFO Program

1.0 Background

A CAFO regulation went into effect on August 24, 2000. Four KPDES general permits for swine, poultry, beef, and dairy were issued on October 13, 2000. Kentucky has some 2,700 inventoried AFOs, of which some 250 are believed to be CAFOs.

2.0 Lead Regulatory Agency

Kentucky's NPDES program is administered by the Kentucky Department of Environmental Protection (DEP), Division of Water. The Kentucky Division of Water (KDOW) also permits wastewater systems. More information about DEP and DOW can be found at www.nr.state.ky.us/nrepc/dep/dep2.htm and <http://water.nr.state.ky.us/dow/dwhome.htm>, respectively.

3.0 State Regulations Regarding AFO/CAFOs

Regulation 401 KAR 5:072 on concentrated animal feeding operations became effective on August 24, 2000 (1). This regulation provides information on operation siting and land application requirements for beef, dairy, poultry, and swine operations. Specific language from the regulation can be found at <http://water.nr.state.ky.us/dow/401kar5-072a.pdf>.

The Agriculture Water Quality Act was passed by the Kentucky General Assembly in 1994 to protect surface and ground water resources from agricultural pollution. The Act requires all land owners with 10 or more acres to develop and implement a farm water quality plan based upon guidance from a Statewide Water Quality Plan (KDOW, 1997). Technical and financial assistance may be available during plan development. Landowners must select best management practices (BMPs) for their individual plans from the Statewide Water Quality Plan and implement the BMPs by October, 2001.

The enabling legislation for Wastewater Facility Construction Permits is KRS 224.10-100 and 224.70-110. These statutes can be found at <http://162.114.4.13/KRS/224-10/CHAPTER.HTM>. Construction permit regulations are found in 401 KAR 5:005, which can be found at www.lrc.state.ky.us/kar/401/005/005.htm.

4.0 Types of Permits

NPDES

Kentucky administers the NPDES Program and issues NPDES permits through the Kentucky Discharge Elimination System (KPDES). Operations that are defined as CAFOs pursuant to 401 KAR 5:060 (KPDES application requirements), Section 10 are required to obtain a KPDES Permit. KPDES general permits for swine, poultry, beef, and dairy facilities were issued on October 13, 2000. Specific information and requirements from about these permits can be found at <http://water.nr.state.ky.us/dow/cafo.htm> (KDOW, October 2000a).

Other

Kentucky's Division of Water issues two other types of permits, besides the NPDES permit, that

directly affect animal feeding operations, including Wastewater Facility Construction Permits and Kentucky No Discharge Operational Permits (KNDOP).

5.0 Permit Coverage

Wastewater Facility Construction Permits are required prior to beginning construction or modification of any sewage system (i.e., any system designed for collecting, pumping, or disposing of waterborne sewage) used for treatment of wastewater.

Kentucky No Discharge Operational Permits are issued to AFOs rather than NPDES permits (USEPA, 1998).

Kentucky Pollution Discharge Elimination System (KPDES) Permits are required for any point source in the State of Kentucky, including CAFOs as defined by 40 CFR 122.23 and Part 122 Appendix B. If there are more than 1,000 animal units, a facility is a CAFO (KDOW, August 2000a). Animal equivalents for 1,000 animal units are (KDOW, August 2000a):

- 1,000 head of beef cattle
- 700 head of dairy cattle
- 2,500 pigs, each weighing more than 55 pounds
- 100,000 laying hens or broilers

When an operation is defined as a CAFO, it can be permitted under a KPDES General Permit or a KPDES Individual Permit, depending upon the nature of the operation (KDOW, August 2000a). All operations that have between 1,000 and 1,500 animal units are eligible for coverage under a KPDES General Permit with the following exceptions (KDOW, August 2000a):

- CAFOs that are subject to an existing individual KPDES permit
- CAFOs greater than 1,500 animal units are required to obtain KPDES individual permits
- CAFOs that the Director has determined are or will violate water quality standards
- CAFOs that could discharge into surface water which has been classified as an Exceptional or Outstanding State or National Resource Water must obtain an individual KPDES permit

All operations that are greater than 1,500 animal units must obtain a KPDES Individual Permit (KDOW, August 2000a).

Separate KPDES general permits for swine, poultry, beef, and dairy facilities were developed. These permits provide detailed information for each facility type, including effluent limitations and monitoring requirements, compliance schedules, reporting of monitoring results, BMP plan requirements, and siting criteria (KDOW, August 2000c). Refer to these permits for more specific information.

6.0 Permit Conditions

Approvals

	# AFOs Permitted	Total # in Database to Date	# CAFOs Permitted
Swine	436	490	0 (estimate 50 - 75 currently)
Dairy	689	1467	0 (estimate < 5 currently)
Beef	197	306	0 (estimate < 5 currently)
Poultry	3	426	0 (estimate 150 - 175 currently)

Note: (1) The # of CAFOs permitted will start to increase with the recent issuance of general permits on October 13, 2000. As such, CAFOs currently permitted under the KNDOP program (see # of AFOs permitted column) will now be permitted under the KPDES program. (2) Some of the operations listed here do not require a permit since they do not have a liquid waste handling system (basis for KNDOP).

Lagoon Design and Specifications

A waste lagoon must have one foot of freeboard, a 2-foot high berm, an emergency spillway, and may be larger than 5 acres in size. Lagoons must be able to contain one year of production solids, 180 days of manure, 12 inches of excess precipitation, and the volume of one 25-year, 24-hour storm event. Permeability cannot exceed 1×10^{-6} centimeters/second and monitoring wells are required. There must be at least 5 feet from bottom of the lagoon to ground water unless an approved synthetic liner is installed. Although there is no financial assurance requirement, closure requirements stipulate that abandoned lagoons be emptied, filled, and revegetated.

Discharge Rules

Kentucky Pollution Discharge Elimination System (KPDES) Permits are issued as no discharge permits, except in the event of a 25-year, 24-hour storm event.

Waste Management Plans

Each animal feeding operation must develop a nutrient management plan that describes how waste will benefit surrounding land, when and where it will be applied, and a description of the crop nutrient requirements. CAFOs must develop a Comprehensive Nutrient Management Plan (CNMP) as a part of their KPDES permit requirement.

Separation Distances

A barn or waste lagoon cannot be in a 100-year floodplain or a jurisdictional wetland. Barns or waste lagoons must be 1,500 feet from dwellings not owned by applicant, 150 feet from lakes or rivers, and 1 mile from downstream waters listed as exceptional water or outstanding national resource water. See 401 KAR 5:072 for further siting requirements (KDOW, August 2000c).

Land Application Requirements

When injection is used during land application a minimum distance of 500 feet from dwellings,

150 feet from water wells, and 750 feet from downstream waters listed as exceptional water or outstanding national resource water must be maintained. If waste is being applied to land without injection the minimum distance increases to 1,000 feet from dwellings and 1,500 feet of downstream waters listed as exceptional water or outstanding national resource water. The distance required from wells remains the same when injection is not used (KDOW, August 2000c).

Wastewater Facility Construction Permits

Wastewater Facility Construction Permits require detailed plans that describe discharge points and highlight new construction. An engineering report must be submitted before construction is authorized. After construction, the permit applicant must submit certification by a registered engineer that the facility was constructed according to the approved plans.

7.0 Enforcement Information

Periodic inspections by Division of Water inspectors in response to complaints or identified problems (USEPA, 1998). The Commonwealth conducted a statewide survey over the past two years to identify AFOs and CAFOs that currently exist in Kentucky. That effort has continued as new operations are sited or expanded. The agency will inspect CAFOs in accordance with agreed upon procedures between the state and EPA.

8.0 Voluntary Programs

KDOW is the lead agency for voluntary programs. The Division administers nonpoint source pollution grants.

Funds provided through Section 319 Nonpoint Source Implementation Grants can pay for up to 60 percent of the total cost of pollution control projects (USEPA, 1998)

9.0 Additional State-Specific Information

Cooperative Extension Service

The University of Kentucky and Kentucky State University (land grant universities) are partners in the Kentucky Cooperative Extension, which serves as a link between counties and the state's land grant universities to help people improve their lives through education that focuses on their issues and needs. The Service focuses on a number of programs, including agriculture and natural resources. KY*A*SYST is one of many projects within the agriculture and natural resources program. It is a voluntary water quality educational program that was developed to help landowners evaluate their farmstead practices and structures which may impact groundwater quality. KY*A*SYST offers several publications on topics including livestock waste storage and livestock yards management. For more information about the extension service, refer to www.ca.uky.edu/coopext/index.htm.

Comprehensive Nutrient Management Plan (CNMP) Certification

Kentucky does not have a CNMP preparer certification program. Kentucky issued on October 13, 2000, KPDES General Permits for CAFOs to develop and maintain a site-specific CNMPs that uses the most recent U.S. Department of Agriculture-National Resource Conservation

Service guideline for waste management as a basis. The CNMP is not required to be prepared by a certified planner (KDOW 2000a).

Memorandum of Agreement (MOA)

Although no other state agency involvement was identified, the Division of Water has a Memorandum of Agreement with the Natural Resource Conservation Service to coordinate activities as they relate to animal waste permitting (ASIWPCA, 1997).

10.0 References

ASIWPCA. 1997. *CAFO Standards for Pork Production, Survey*. Association of State and Interstate Water Pollution Control Administrators. Washington, DC.

KDOW. n.d. *Concentrated Animal Feeding Operations: 401 KAR 5:072*. n.d. Kentucky Division of Water. <<http://water.nr.state.ky.us/dow/401kar5-072a.pdf>>. Accessed September 2000.

KDOW. 1997. *Other Programs to Address Water Quality Issues*. Kentucky Division of Water. <<http://water.nr.state.ky.us/dow/303other.htm>>. Accessed September 2000.

KDOW. February 2000. *Statement of Emergency 401 KAR 5:072E*. Kentucky Division of Water. <www.lrc.state.ky.us/kar/401/005/072E.htm>. Accessed September 2000.

KDOW. August 2000a. *Animal Feeding Operations (AFO) & Concentrated Animal Feeding Operations (CAFO)*. Kentucky Division of Water. <<http://water.nr.state.ky.us/dow/cafo.htm>>. Accessed September 2000.

KDOW. August 2000b. *Concentrated Animal Feeding Operations*. Kentucky Division of Water. <<http://water.nr.state.ky.us/dow/cafo2.htm>>. Accessed September 2000.

KDOW. August 2000c. *Concentrated Animal Feeding Operations: General KPDES Permits for Concentrated Animal Feeding Operations - Swine, Poultry, Beef, or Dairy Facilities*. Kentucky Division of Water. <<http://water.nr.state.ky.us/dow/cafo2.htm>>. (Available from web pages referenced in 2000a or 2000b). Accessed September 2000.

KDOW. August 2000d. *Welcome to the Kentucky Division of Water*. Kentucky Division of Water. <<http://water.nr.state.ky.us/dow/dwhome.htm>>. Accessed September 2000.

USDA. 1999. *1997 Census of Agriculture: Geographic Area Series*. U.S. Department of Agricultural Statistics Service, Washington, DC.

USDA. 2000. Specific queries conducted on the 1997 Census of Agriculture published data. U.S. Department of Agriculture.

USEPA. 1998. *Efforts to Improve Controls on Concentrated Animal Feeding Operations (CAFOs)*. Results of June 1998 Survey of States and Regions compiled by G. Beatty. U.S. Environmental Protection Agency, Office of Water, Washington, DC.

Louisiana's CAFO Program

1.0 Background

Based upon information provided to EPA by USDA it is estimated that there are 245 AFOs with from 300 to 1,000 animal units and 88 AFOs with more than 1,000 animal units in Louisiana. These are primarily in the broiler sector (USDA, 1999; USDA, 2000).

Animal wastes from dairy operations are a documented source of adverse water quality impacts in southeastern Louisiana. The recent growth of the poultry industry is bringing greater attention to water quality impacts from agriculture. The proper management of dairy and poultry wastes is one of the primary water quality issues in Louisiana (USEPA, 1998).

2.0 Lead Regulatory Agency

The Louisiana Department of Environmental Quality (DEQ) has primary authority for NPDES/CAFO permit issuance, inspection, and enforcement. Information about DEQ can be found at www.deq.state.la.us/.

3.0 State Regulations Regarding AFOs/CAFOs

Surface water permits are addressed in Title 33 of Louisiana's Environmental Quality Regulations, Part IX (chapters 3 and 23). These regulations are consistent with the federal regulations at 40 CFR 122.23.

4.0 Types of Permits

NPDES

Louisiana became authorized to administer permits under the NPDES program on August 27, 1996. EPA Region 6 issued a CAFO general permit in 1993 and re-proposed issuance of a CAFO general permit on June 26, 1998. The proposed general permit will not address CAFOs in Louisiana. Louisiana will begin to issue individual NPDES permits to CAFOs (Senkayi, 1997).

Other

The Louisiana Environmental Quality Act prohibits any person from conducting an activity that results in the discharge of any substance into the waters of the state (including ground water) without the appropriate permit, variance, or license (La. Rev. Stat. 2075).

5.0 Permit Coverage

Coverage under state regulations is similar to coverage under federal regulations (Title 33, §2335). Generally, any CAFO facility that discharges pollutants to waters of the state must obtain a permit. State regulations define AFOs and CAFOs in a manner similar to the federal regulations.

6.0 Permit Conditions

Approvals

The permit application process is consistent with federal NPDES requirements.

Lagoon Design and Specifications

State regulations reserve a location for CAFO effluent guidelines under Title 33, Chapter 7, Section 709(D), Miscellaneous Small Dischargers, CAFOs.

Discharge Rules

It appears that the CAFO permit is based on best professional judgement, which is likely to reflect federal feedlot effluent limitation guidelines. State regulations reserve a location for CAFO effluent guidelines under Title 33, Chapter 7, Section 709(D).

Waste Management Plans

No information was found in publically available sources.

Separation Distances

No specific separation distances have been developed (NASDA, 1997). Site-specific buffer requirements are included in the BMP plan worked out between the farmer and the Agriculture Department.

Land Application Requirements

Land application rates are based on agronomic rates as outlined in a waste management plan (NASDA, 1997).

7.0 Enforcement Information

General Enforcement Information

No information was found in publically available sources.

General Inspection Information

CAFOs are inspected annually; AFO inspections are complaint-driven.

8.0 Voluntary Programs

No information was found in publically available sources.

9.0 Additional State-Specific Information

Cooperative Extension Service

Louisiana State University Cooperative Extension Service (LCES) has an agricultural center as well as an agricultural experiment station and international programs. More information about the Service can be found at www.agctr.lsu.edu/wwwac/lces.html. LCES is working with all agricultural producers in Louisiana to produce a model agricultural pollution prevention plan (PPP) that can be included in a statewide educational program. Using funds from the FY 97 Section 319 grant, LDEQ initiated a cooperative agreement with LCES to implement this educational program. This project called for LCES to work with LDEQ, the Louisiana Farm Bureau Federation (LFBF), Louisiana Department of Agriculture and Forestry (LDAF), and agriculture producer groups such as ASCL to implement PPPs for major agricultural commodities throughout Louisiana. These commodities include cotton, soybeans, rice, sugarcane, sweet potatoes, dairy, poultry, and hogs. The model PPP includes all of the BMPs reviewed and recommended by the BMP Review Committees.

LCES, in association with LDEQ, USDA's Natural Resources Conservation Service (NRCS), the Farm Service Agency and other related federal, state, and local agencies, also adopted the National Farmstead Assessment System (Farm*A*Syst) guidelines and introduced this program in Louisiana.

Comprehensive Nutrient Management Plan (CNMP) Certification

Louisiana does not have a CNMP preparer certification program.

Other Information

LDEQ shares responsibility for nonpoint source issue with the Louisiana Department of Natural Resources (USEPA, 1998). Louisiana Cooperative Extension Service and Louisiana Department of Agriculture and Forestry also play a role in managing nonpoint source pollution [The specific roles of these agencies were not identified.]

10.0 References

- NASDA. 1997. *Summary Matrix of State Survey on Waste & Manure Management Regulations*. National Association of State Agriculture Departments.
- Senkayi, A. U.S. Environmental Protection Agency, Region 4. Summary of state program information sent to Ruth Much (SAIC), fall 1997.
- USDA. 1999. *1997 Census of Agriculture: Geographic Area Series*. U.S. Department of Agricultural Statistics Service, Washington, DC.
- USDA. 2000. Specific queries conducted on the 1997 Census of Agriculture published data. U.S. Department of Agriculture.
- USEPA. 1998. *Efforts to Improve Controls on Concentrated Animal Feeding Operations (CAFOs)*. Results of June 1998 Survey of States and Regions compiled by G. Beatty. U.S. Environmental Protection Agency, Office of Water, Washington, DC.

Maine's CAFO Program

1.0 Background

Based upon information provided to EPA by USDA it is estimated that there are 46 AFOs with from 300 to 1,000 animal units and 8 AFOs with more than 1,000 animal units in Maine. These are primarily in the dairy livestock sector (USDA, 1999; USDA, 2000).

Recently, Maine has focused attention on the siting of large animal feeding operations in the state. In January 1999, the Land and Water Resources Council issued a final report to the State Legislature's Joint Standing Committee on Agriculture, Conservation, and Forestry that included recommended draft state legislation for CAFOs. The draft legislation was entitled the Large Concentrated Animal Feeding Operation Act. The draft Act defines CAFOs, sets regulatory requirements, promotes livestock production, and protects the environment and human health. Specific language from this draft act can be found at <http://janus.state.me.us/dep/blwq/agriculture/cafofina.pdf>.

2.0 Lead Regulatory Agency

The Office of Agricultural, Natural, and Rural Resources (OANRR) addresses environmental issues associated with agriculture (OANRR, n.d.). Information about the Office can be found at www.state.me.us/agriculture/oanrr/homepage.htm.

3.0 State Regulations Regarding AFOs/CAFOs

Maine was authorized to administer the NPDES program in January 2001. The state has regulations at Chapters 520-529. Maine's "Manure Law" (17 MRSA 2701-B) establishes rules and standards for proper manure handling, including use of best management practices (BMPs) (OANRR, 1993). Specific language from the law can be found at www.state.me.us/agriculture/oanrr/manurelaw.htm.

Animal Carcass Disposal Rules establish standards for various disposal methods for domestic animal carcasses. These rules provide detailed guidance on methods that allow for proper disposal that minimizes environmental impacts and nuisances (OANRR, n.d.).

Maine has a Nutrient Management Act (Title 7 Agriculture and Animals, Part 10, Chapter 747) that provides information about nutrient management plans, manure spreading, livestock operations permits, penalties, and a number of other topics (Maine, 2000). Specific language from Chapter 747 can be found at <http://janus.state.me.us/legis/statutes/7/title7ch7470sec0.html>.

Maine has also developed legislation to address Nutrient Management Planning (APA 01-001 Chapter 565 Nutrient Management Rules) (USEPA, 1998). Specific text from this legislation can be found at <ftp://ftp.state.me.us/pub/sos/cec/rcn/apa/01/001/001c565.doc>.

4.0 Types of Permits

NPDES

Maine became authorized to administer the NPDES Permit Program January 12, 2001. Thus, responsibility for permitting CAFOs in Maine will transition from EPA Region 1 to the state.

5.0 Permit Coverage

As an authorized NPDES state, Maine CAFO permit application regulations and definitions are consistent with federal requirements.

6.0 Permit Conditions

Maine's Nutrient Management Rule (APA 01-001 Chapter 565) requires nutrient management plans to be prepared by certified preparers. Chapter 565, section 4, requires that owners or operators of a farm that meets the following criteria must have a nutrient management plan (MEDA, 2000):

- Farms that confine and feed more than 50 animal units at a one time
- Farms that use more than 100 tons of manure per year not generated on that farm
- Farms that are the subject of a verified complaint of improper manure handling
- Farms that store or use regulated residuals

7.0 Enforcement Information

General Enforcement Information

Pursuant to 17 MRSA section 2701-B, the Commissioner of Agriculture, Food and Rural Resources responds to complaints of improper storage or handling of manure. If the commissioner identifies a source of manure as a nuisance, and the nuisance is caused by using other than best management practices, the commissioner identifies what BMPs are needed and requires the facility to abide by necessary changes. If the facility responsible for improper manure handling does not adopt BMPs, a written report is referred to the Department of Environmental Protection and the Attorney General. Similarly, if improper manure handling affected water quality and the responsible facility does not adopt BMPs, the matter is referred to the Commissioner of Environmental Protection, noting that a potential water quality violation exists, and the Department of Environmental Protection may respond as appropriate (OANRR, 1993).

General Inspection Information

Inspections are complaint-driven (NASDA, 1997).

8.0 Voluntary Programs

Maine encourages using site-specific BMPs for protection under the state's Right to Farm laws (NASDA, 1997).

9.0 Additional State-Specific Information

Cooperative Extension Service

The University of Maine Cooperative Extension has a Dairy and Livestock Program to help farmers and operators to better manage renewable resources, such as soil, water, nutrients, and crops. Information about the Cooperative Extension and the program can be found at www.umext.maine.edu/ and www.umext.maine.edu/topics/dairy.htm, respectively.

Comprehensive Nutrient Management Plan (CNMP) Certification

Maine's CNMP Preparers Certification Program was implemented in 1999 by the Department of Agriculture, Food, and Rural Resources (section 3). Maine regulation has two types of nutrient management planning (NMP) certification (section 7) (MEDA, 2000):

- Commercial/Public NMP specialist: a person who may develop and approve NMPs for another person and may approve NMPs prepared by another person. Public NMP specialists are public agency employees.
- Private NMP specialist: a person who may develop and approve an NMP only for his or her own operation.

To receive Nutrient Management Planning certification, an applicant must provide proof of certification by a national certifying program for nutrient management planning training approved by the Commissioner, such as (section 7) (MEDA, 2000):

- National Alliance of Independent Crop Consultants
- American Society of Agronomy
- American Registry of Certified Professional in Agronomy, Crops, and Soils

An applicant may also receive certification through a state training and certification program approved by the Commissioner. To receive certification through the state of Maine, an applicant must pass the Nutrient Management Planning Certification Test and must have done one of the following (section 7) (MEDA, 2000):

- Successfully completed a precertification training workshop offered by the Department, University of Maine Cooperative Extension, or other agency approved by the Commissioner.
- Demonstrated a good understanding of agricultural subjects, including soil fertility, crop management, and manure management, from past education, training, or experience by passing a test approved by the Commissioner for this purpose.

Certification is valid for 5 years. To recertify, an applicant must retake the certification exam or earn credits at workshops and seminars designated for this purpose by the Commissioner. The number of credits needed are as follows: 10 for every 5-year recertification interval for Commercial/Public NMP Specialists and 6 for every 5-year recertification interval for Private NMP Specialists (section 7).

Other Information

The Maine Department of Agriculture is working jointly with the Maine Department of Environmental Protection and EPA-New England office on new legislation.

The Department of Environmental Protection has developed guidelines for municipal zoning ordinances related to agriculture. These guidelines dictate the following:

- All spreading or disposing of manure is to be accomplished through the practices recommended in *Maine Guidelines for Manure and Manure Sludge Disposal on Land* (Published by the University of Maine Soil and Water Conservation Commission in 1972).

- Manure must not be stored within 100 feet (horizontal distance) of a great pond classified GPA or within 75 feet of other water bodies or wetlands.
- Spreading or disposal of manure within the shoreland zone requires a Soil and Water Conservation Plan.

10.0 References

Land and Water Resources Council. 1999. *Large Concentrated Animal Feeding Operations (CAFOs)*. Final report submitted to the Joint Standing Committee on Agriculture, Conservation, and Forestry. <<http://janus.state.me.us/dep/blwq/agriculture/cafofina.pdf>>. Accessed October 2000.

Maine. 2000. *Nutrient Management Act, Chapter 747*. <<http://janus.state.me.us/legis/statutes/7/title7ch7470sec0.html>>. Accessed May 2000.

MEDA. 2000. *APA 01-001 Chapter 565 Nutrient Management Rules*. Maine Department of Agriculture. <<http://www.state.me.us/sos/cec/rcn/apa/01/chaps01.htm>> or <<ftp://ftp.state.me.us/pub/sos/cec/rcn/apa/01/001/001c565.doc>>. Accessed October 2000.

MEDEP. 2000. *Bureau of Land and Water Quality, Agriculture Main Page*. Maine Department of Environmental Protection <<http://janus.state.me.us/dep/blwq/ag.htm>>. Accessed October 2000.

NASDA. 1997. *Summary Matrix of State Survey on Waste & Manure Management Regulations*. National Association of State Departments of Agriculture.

OANRR. 1993. *The Manure Law*. Office of Agricultural, Natural, and Rural Resources. <<http://www.state.me.us/agriculture/oanrr/manurelaw.htm>>. Accessed October 2000.

OANRR. n.d. *Homepage*. Office of Agricultural, Natural, and Rural Resources. <www.state.me.us/agriculture/oanrr/homepage.htm>. Accessed October 2000.

USDA. 1999. *1997 Census of Agriculture: Geographic Area Series*. U.S. Department of Agricultural Statistics Service, Washington, DC.

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USEPA. 1998. *Efforts to Improve Controls on Concentrated Animal Feeding Operations (CAFOs)*. Results of June 1998 Survey of States and Regions compiled by G. Beatty, U.S. Environmental Protection Agency, Office of Water, Washington, DC.

Voorhees, J. Environmental Protection Agency, Region 1. Summary of state program information sent to Ruth Much (SAIC), fall 1997.

Maryland's CAFO Program

1.0 Background

Based upon information provided to EPA by USDA it is estimated that there are 475 AFOs with from 300 to 1,000 animal units and 130 AFOs with more than 1,000 animal units in Maryland. These are primarily in the broiler sector (USDA, 1999; USDA, 2000).

Maryland's General Assembly passed the Water Quality Improvement Act (WQIA) of 1998, and has developed specific regulations to implement the act. The Act mandates nutrient management plans for virtually all Maryland farms (MDA, 2000c).

2.0 Lead Regulatory Agency

The Maryland Department of the Environment (MDE), Water Management Administration, Water and Wastewater Permits Program, administers the NPDES permitting program.

The Maryland Department of Agriculture (MDA) has been given full legislative authority to implement the WQIA of 1998 (MDA, 2000c).

3.0 State Regulations Regarding AFOs/CAFOs

Facilities that meet EPA's federal definition of a CAFOs are considered point sources and must be permitted, either through a general permit or an individual permit.

Code of Maryland (COMAR) regulations (COMAR 26.08.03) prohibit the discharge of any wastewaters, regardless of volume, to waters of the state unless authorized by a discharge permit. For animal feeding operations, improper discharge of wastewaters (as defined under the law) can originate from the following:

- Improper storage of animal wastes
- Improper design, construction, or operation of waste storage facilities
- Improper application of wastewater to pastures or cropland (including problems of timing or rates)
- Leaking storage or treatment facilities
- Storage or treatment unit overflows or structural failures
- Discharge of runoff contaminated by contact with concentrated animal waste

4.0 Types of Permits

NPDES

Maryland's General NPDES Permit for Discharges from CAFOs is located at www.mde.state.md.us/permit/wma/forms/anim_feeding/af_per.pdf.

Other

Animal Waste Storage Structure Construction Notification Permits are required prior to constructing an animal waste or a manure storage structure.

5.0 Permit Coverage

The operator of animal feeding operations with more than 1,000 animal units and smaller facilities that have confined animals that come into direct contact with surface waters must submit a notice of intent (NOI) to obtain coverage under the NPDES General Discharge Permit for Discharges from Concentrated Animal Feeding Operations (General Permit 96-AF).

Under the permit, discharges in accordance with permit conditions are authorized from animal waste systems. Discharges from animal waste systems to surface water can occur only in the event of a 25-year, 24-hour or greater storm event. Animal waste systems covered by the permit include feedlots and loafing areas, storage facilities, handling equipment, and field application operations.

The Maryland NPDES Permit program and the Maryland Nutrient Management Program are operated by separate agencies under distinct programs. The NPDES Program requires CAFOs to prepare a waste storage and handling plan. All of these facilities would also be covered by the Water Quality Improvement Act which requires all agricultural operations with gross annual incomes in excess of \$2,500 or livestock operations with more than eight animal units to prepare a nutrient management plan (MDA, 2000c).

6.0 Permit Conditions

Approvals

MDE is responsible for developing and approving NPDES permits issued to CAFOs in Maryland. The Maryland Department of Agriculture (MDA) is responsible for the implementation of the Nutrient Management Program. This program requires that Nutrient Management Plans are developed by individuals who have been certified by MDA.

Lagoon Design and Specifications

All wastewater treatment and storage systems must be operated and maintained as required by Natural Resources Conservation Service (NRCS) Waste Management System Standard 312. The facility must be operated in accordance with a Waste Management System Plan, approved by the Soil Conservation District, and must be available on-site for inspection.

All earthen embankment structures must be inspected for structural stability on a weekly basis. The outer embankment and top of the berm must be kept free of shrubs and trees. Records of inspections and maintenance must be kept at the facility for inspection by the Department personnel.

Discharge Rules

Discharges are authorized from animal waste systems to ground water via application of liquid wastewater to the soil surface and discharge from field application of wastewater. Discharges from animal waste systems to surface water can occur only in the event of a 25-year, 24-hour storm event (or worse). Animal waste systems include feedlots and loafing areas, storage facilities, handling equipment, and field application operations.

Waste Management Plans

Waste Management System Plans for facilities that include animal wastewater distribution systems must also meet all requirements of NRCS Waste Utilization Standard 633 and of COMAR 15.20.04.09 and 15.20.04.10 for nutrient management plan content and recommendations.

Separation Distances

The permittee must provide adequate means to prevent spray droplets from entering adjacent properties, by either direct application or wind carryover. These means must include a buffer zone that is:

- 200 feet from the wetted perimeter of the spray irrigation site to property lines in an open area or 100 feet in an area with a tree buffer
- 500 feet from the wetted perimeter of the spray irrigation site to houses or other occupied structures in an open area or 250 feet in an area with a tree buffer
- 50 feet from waters of the state, including intermittent streams
- Approved by the Maryland Department of the Environment as suitable to control the movement of spray onto adjacent land

Land Application Requirements

For facilities utilizing liquid animal wastewater, the plan must also comply with NRCS Irrigation Water Management Standard 449:

- The annual average hydraulic loading rate must not exceed 2 inches per week, and animal wastewater applied must not exceed the long-term soil infiltration rate or result in surface runoff or ponding.
- Distribution of treated wastewater must not take place during periods of precipitation, high winds, freezing conditions, or saturated soil.
- Prior to wastewater distribution, the permittee must provide a waste storage unit that:
 - Meets the requirements of NRCS standard 425 for waste storage ponds, meets the requirements of NRCS Standard 359 for waste treatment lagoons, or meets the requirements of NRCS Standard 313 for agricultural waste storage facilities
 - Is sufficient to prevent surface discharge except in the case of a 25-year, 24-hour storm event.
- The permittee must provide adequate means to prevent animal wastewater distributed by drop irrigation from entering adjacent properties by direct application, runoff, or wind carryover. The permittee must maintain a buffer zone that is at least 50 feet from waters of the state, including intermittent streams.
- The facility must be operated at all times to minimize the possibility that offensive odors will escape from facility boundaries and to prevent the facility from becoming a public nuisance.
- Daily irrigation data must be kept in the log by the farm operator and must describe the area(s) or section(s) under irrigation, application rate and time, instances of ponding or

runoff, and weather conditions. The log must be kept on-site and be available for inspection by Department personnel upon request.

7.0 Enforcement Information

NPDES enforcement penalties are consistent with Federal requirements.

Under the WQIA farms who do not develop a Nutrient Management Plan may be fined up to \$250. Failure to implement the plan can result in fines of up to \$200 per year. Other penalties are loss of any current privileges to retrieve cost-share grants and limits on future cost-share assistance. Subsequent violations incur fines of up to \$100 for each occurrence, not to exceed \$2,000 per farmer or operator per year (MDA, 2000b).

Deadlines for implementing permit conditions vary depending on the type of fertilizer used. Farmers using commercial fertilizers are required to have nitrogen and phosphorous-based nutrient management plans developed by December 31, 2001. These plans must be implemented by December 31, 2002. Farmers applying animal manure, biosolids, or other organic nutrients must have a nitrogen-based plan developed by December 31, 2001 and implemented by December 31, 2002. Development of a phosphorous-based plan is required by July 1, 2004, with implementation due by July 1, 2005. Farmers applying sludge or manure are required to develop nitrogen and phosphorous nutrient management plans by July 1, 2004 (MDA, 2000b).

Inspection Programs

To ensure that the data submitted by the dischargers are representative and accurate, MDE's Environmental Risk Assessment Program conducts compliance sampling inspections on an annual basis at each major industrial wastewater discharger and significant non-major dischargers in the state (MDE, 2000).

MDA will conduct on-site evaluations to assess the proper implementation of the nutrient management plan. MDA intends to develop additional regulations to monitor compliance (MDA, 2000c).

8.0 Voluntary Programs

Tax Credit

The WQIA of 1998 provides a tax credit to eligible farmers of up to \$4,500 to help make the transition to phosphorous-based nutrient management planning. Credits may be earned for up to 3 years and "rolled over" for 5 years. Additional deductions will be available for equipment purchases for poultry or livestock manure spreading (MDA, 2000c).

Cost-Share Assistance for Nutrient Management Plan Development

The Maryland Agricultural Water Quality Cost-Share (MACS) Program offers cost-share assistance of up to 50 percent—not to exceed \$3 per acre—for farmers who want their nutrient management plan developed by a non-governmental consultant. Nutrient management plans developed with cost-share assistance are required to be implemented as they are developed. Farmers should contact their soil conservation district to apply. Nutrient management plans developed by Maryland Cooperative Extension consultants are provided free of charge (MDA,

2000c).

The MACS Program can provide up to 87.5 percent of the cost to install BMPs, such as animal waste management systems, to protect water quality. Local Soil Conservation Districts provide free technical assistance in designing projects and assist with the application process.

Courses on Nutrient Management

MDA has developed several environmental programs aimed at controlling impacts from agriculture activities and educating farmers and the public on the role of agriculture and environmental conservation. For example, the state provides financial and technical assistance, as well as staffing support, to the state's 24 soil conservation districts in their promotion of soil conservation and water quality programs at the local level. Programs are implemented through Soil Conservation and Water Quality Plans on individual farms, featuring a wide range of agricultural "best management practices" to protect the environment. These plans help farmers prevent soil erosion, control nutrient pollution, and protect water quality throughout the state.

9.0 Additional State-Specific Information

Cooperative Extension Service

Information regarding the University of Maryland's Cooperative Extension Service can be obtained at www.agnr.umd.edu/CES/. Refer to the Voluntary Programs section above for a description of some of Maryland's Extension Service programs.

Comprehensive Nutrient Management Plan (CNMP) Certification

MDA Nutrient Management Regulations (Title 15, Subtitle 20) require CAFOs to have a nutrient management plan prepared by a certified nutrient management consultant. State NPDES regulations and general permits for CAFOs do not require certification of preparers of the waste management plan.

MDA developed a CNMP certification program in 1992. Individuals certified by MDE are eligible to prepare CNMPs if they pass an examination. Requirements for certification include training, examination, continuing education, minimum credentials, and renewal (15-20.03).

Case Studies/Innovative Programs

MDA is actively involved with environmental conservation programs particularly as they relate to the state's Nutrient Management Program. This involvement includes conducting specific surveys and studies to characterize agriculture nutrient management practices in Chesapeake Bay watersheds and running a nutrient management training program. In 1998, the Maryland General Assembly established the Animal Waste Technology Fund to encourage individuals, partnerships, and companies to develop alternative uses of animal waste. Pilot projects that demonstrate or commercialize existing technology will be eligible for funding.

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Massachusetts's CAFO Program

1.0 Background

Based upon information provided to EPA by USDA it is estimated that there are 90 AFOs with from 300 to 1,000 animal units and 7 AFOs with more than 1,000 animal units in Massachusetts. These are primarily in the turkey livestock sector (USDA, 1999; USDA, 2000).

2.0 Lead Regulatory Agency

The Massachusetts Department of Food and Agriculture is the lead regulatory agency regarding CAFOs. Information about the Department can be found at www.massdfa.org/.

3.0 State Regulations Regarding AFOs/CAFOs

The state has an industrial wastewater discharge program, but this program does not address CAFOs (see 314 CMR 3.00, 4.00, and 12.00). In addition, the state has issued ground water permits, but only for the discharge of sanitary sewage (see 314 CMR 4.00 and 5.00).

4.0 Type of Permits

NPDES

Massachusetts is not authorized to administer the federal NPDES Program. Region 1 issued its first NPDES CAFO permit in July 1999 to a dairy operation in Massachusetts.

5.0 Permit Coverage

No information was found in publically available sources.

6.0 Permit Conditions

No information was found in publically available sources.

7.0 Enforcement

No information was found in publically available sources.

8.0 Voluntary Programs

The Massachusetts Department of Food and Agriculture offers a voluntary program called the Agriculture Environmental Enhancement Program (AEEP). This program grants \$200,000 a year to farmers so they can purchase materials that will enable them to protect water quality from the potential impacts of agricultural practices. Examples of materials farmers can purchase with the grant money include fencing, culverts, seed, and gutters (DFA, 2000).

9.0 Additional State-Specific Information

Cooperative Extension Service

The University of Massachusetts Extension has a Crops, Dairy, and Livestock program that provides information about issues such as grazing, nutrient management, and environmental quality (soil and water quality). Information about the Extension can be found at www.umass.edu/umext/.

Comprehensive Nutrient Management Plan (CNMP) Certification

Massachusetts does not have a comprehensive nutrient management plan (CNMP) preparer certification program.

Other Information

The Massachusetts Department of Environmental Protection, Department of Food and Agriculture, and Coastal Zone Management are working to develop a state strategy (USEPA, 1998).

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Michigan's CAFO Program

1.0 Background

Based upon information provided to EPA by USDA it is estimated that there are 510 AFOs with from 300 to 1,000 animal units and 140 AFOs with more than 1,000 animal units in Michigan (USDA, 1999; USDA, 2000).

Michigan is authorized to issue NPDES permits to CAFOs; however, the state has elected not to issue permits to these facilities. The state relies on voluntary Generally Accepted Agricultural and Management Practices (GAAMPs) guidance issued by the Michigan Commission of Agriculture to protect surface water quality.

2.0 Lead Regulatory Agency

The Michigan Department of Environmental Quality is the lead regulatory agency for CAFOs. Information about the Department can be found at www.deq.state.mi.us/.

3.0 State Regulations Regarding AFOs/CAFOs

Michigan's Right to Farm Act outlines guidelines for farm operations known as Generally Accepted Agriculture Management Practices (GAAMPs). These guidelines, which are set by the Michigan Agriculture Commission, are reviewed annually and revised if necessary.

In 1999, the Michigan legislature enacted P.A. 26, which amended the Michigan Right to Farm Act. P.A. 261 requires the establishment of Generally Accepted Agricultural and Management Practices for Site Selection and Odor Control for New and Expanding Livestock Facilities. These GAAMPs are written to fulfill that purpose and to provide uniform, statewide standards and acceptable management practices based on sound science. A farm or farm operation that conforms to these and other applicable GAAMPs adopted under the Michigan Right to Farm Act according to the Michigan Right to Farm Law (Act 93 of 1981, as amended), must not be found to be a public or private nuisance. The GAAMP for Site Selection and Odor Control for New and Expanding Livestock Facilities was adopted by the Michigan Commission of Agriculture in June 2000.

A GAAMP for Manure Management and Utilization was adopted by the Commission in November 1999. It contains recommended manure management plan content and management practices.

4.0 Types of Permits

NPDES

Michigan is authorized to administer the NPDES program, but has elected not to issue permits to CAFO facilities.

5.0 Permit Coverage

Not applicable.

6.0 Permit Conditions

Michigan does not issue permits, but has elected to issue voluntary guidelines for operations to follow.

The Michigan Department of Agriculture (MDA) has developed GAAMPs as a mechanism to protect the environment. GAAMPs recommend following guidelines from both the USDA's Natural Resources Conservation Service (NRCS) Field Office Technical Guide (FOTG) and the Midwest Plan Service Livestock Waste Facilities Handbook (Michigan Agriculture Commission, 1999) in developing and operating animal feedlots. GAAMPs do not duplicate the information found in these documents on generally accepted management practices for livestock operations but focus on providing more in-depth information on manure management practices. Farms or farm operations conforming to GAAMPs are protected from being found to be a public or private nuisance.

Manure Management System Plan

The November 1999 GAAMPs for Manure Management and Utilization recommend the adoption of a manure management system plan to manage (1) the utilization of manure nutrients and (2) the collection, storage, transportation, and land application of manure; any wastewater, runoff, or leachates from stored feed; and manure odor. The plan should include the frequent (i.e., the daily or every few days) removal of manure from animal areas followed by storage or stacking and land application of the wastes at agronomic rates. Manure tanks should be covered to reduce the escape of odors if it is technically and economically feasible. Other recommended practices to reduce the potential for nuisance complaints about odor are timing land application to take advantage of wind direction and weather conditions, using natural barriers and windbreaks to filter and dissipate odors, and incorporating manure into the soil soon after it is applied (Michigan Commission of Agriculture, 1999).

Lagoon Design and Specifications

Lagoons should be designed according to NRCS-FOTG specifications and guidelines. Lagoons should be able to contain normally occurring direct precipitation, resulting runoff, manure accumulations projected according to the manure management system plan, and the rainfall and runoff from the average 25-year, 24-hour storm for the area. Liners should meet specifications and guidelines in the NRCS-FOTG. Liners may be composed of natural soil, bentonite, or high swelling clays; compacted earthen liners; or flexible membranes (Michigan Commission of Agriculture 1999).

Discharge Rules

No information was found in publically available sources.

Separation Distances

Livestock producers should site their operations where they least impact their neighbors. New outside lot facilities should not be in close proximity to or located uphill along a confining valley leading to residences and other odor-sensitive land uses. Similarly, new residences or sensitive land uses should not be in close proximity to existing lot systems. However, no quantitative setback distances are identified (Michigan Commission of Agriculture, 1999).

Land Application Requirements

Waste application rates should depend on the ability of the soil to store and accept the water and the uptake needs of the crops (Michigan Commission of Agriculture, 1999). Land application should occur during periods of maximum crop nutrient uptake. If possible, manure should not be applied during autumn to reduce the potential for leaching to soils. Application to frozen or snow-covered soils should also be avoided. GAAMPs recommend directing lot runoff through a structure for settling solids in order to reduce odor during storage and land application. Manure should not be applied to soils within 150 feet of surface waters or to areas with a high potential for flooding (Michigan Commission of Agriculture, 1999).

Infiltration Areas

A structure for settling solids and an infiltration area or vegetative filter may be used as an alternative to lagoons for dealing with lot runoff. The infiltration area should be vegetated with a long, grassed, slightly sloping channel or a broad, flat, level or almost level area enclosed by berm or a dike (Michigan Commission of Agriculture, 1999).

7.0 Enforcement Information

No information was found in publically available sources.

8.0 Voluntary Programs

MDA is the lead agency for voluntary programs.

Michigan's Generally Accepted Agriculture Management Practices (GAAMPs) establish guidance for siting animal feeding operations, designing manure and wastewater disposal systems, and applying manure to agriculture lands.

9.0 Additional State-Specific Information

Cooperative Extension Service

Information about the Michigan State University Extension can be found at www.msue.msu.edu/msue/.

Comprehensive Nutrient Management Plan (CNMP) Certification

There is no CNMP preparer or operator certification program in Michigan.

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Minnesota's CAFO Program

1.0 Background

Based upon information provided to EPA by USDA it is estimated that there are 1,357 AFOs with from 300 to 1,000 animal units and 485 AFOs with more than 1,000 animal units in Minnesota. These are primarily in the swine sector (USDA, 1999; USDA, 2000).

2.0 Lead Regulatory Agency

The feedlot program is administered by the MPCA Water Quality Division. The MPCA feedlot unit issues permits to livestock operations throughout Minnesota. Counties may assume responsibility to issue certain permits for feedlots up to 1,000 AUs. MPCA issues all permits over 1,000 AUs and all permits issued in non-delegated counties.

3.0 State Regulations Regarding AFOs/CAFOs

Minnesota Rules Chapter 7020 regulates animal feedlots and the collection, transportation, storage, processing, and disposal of livestock manure for the prevention and abatement of environmental pollution (MPCA, 1999).

Minnesota revised its CAFO regulations in August, 2000 (Chapter 7020). An overview of the changes to Minnesota Rules Chapter 7020 is located at www.pca.state.mn.us/hot/fl-rulessummary.pdf, the MPCA feedlot rule. Minnesota imposes feedlot and manure storage area registration requirements, and imposes construction/expansion and operation and management requirements on different size feedlots.

All feedlots with 50 or more animal units (10 or more if on shoreland) must register with the state. Feedlots with under 300 animal units that have an open-lot pollution hazard (i.e., do not meet runoff standards) may either obtain one of the permits described below or enter into the state's 2005/2010 open lot agreement (which requires installation of interim measures to address the hazard by 2005 and final measures by 2010).

4.0 Types of Permits

NPDES

Minnesota administers the federal NPDES program. As such, MPCA issues individual NPDES permits to confined feeding operations as defined by federal regulation.

Other

State feedlot permits are issued in several forms:

- Feedlots with 1,000 or more animal units or manure storage areas must have, for construction or expansion, an NPDES permit or a State Disposal System Permit (SDS). Permit applications must include an air emissions plan, an emergency response plan, and, for construction or expansion involving a liquid manure storage facility, design specifications and plans signed by a registered professional engineer. An Environmental Assessment Worksheet (EAW) is required for construction of a new feedlot with 1000 animal units or

more, expansion of an existing feedlot by 1,000 animal units or more, expansion of an existing feedlot by more than 500 animal units in a sensitive area. An existing feedlot or manure storage area may not expand to the capacity of 1,000 animal units or more or the manure produced by 1,000 animal units. An existing feedlot or manure storage area in a 100-year flood plain may not expand.

- Feedlots with 1,000 or more animal units or manure storage areas, for operation and management, must have an NPDES or SDS permit. Manure stockpiled for more than one year (or use of the same site year after year) is subject to NPDES or SDS permitting.
- Feedlots with 300 - 999 animal units require a construction short form permit for construction activities related to liquid manure storage areas and new or expanding feedlots. An EAW is required for construction of a feedlot of more than 500 animal units in a sensitive area (e.g., shoreland, flood plain, wild and scenic river district, etc.) or for expansion of an existing feedlot by more than 500 animal units in a sensitive area. The state has standards for constructing liquid manure storage structures. Existing feedlots or manure storage areas are subject to expansion limits.
- Feedlots with 300 - 999 animal units must obtain, for operation and management, an interim permit (as necessary to address pollution hazard or high risk condition), an NPDES permit (if defined as a CAFO), or an SDS permit if they do not meet the state discharge standard or are considered a pollution hazard. Manure stockpiled for more than one year (or use of the same site year after year) is subject to NPDES or SDS permitting.
- Feedlots with under 300 animal units do not require a state feedlot permit for construction, but must comply with technical standards for location, design, construction, and operation. An SDS permit is required where proposed construction differs from technical standards.
- Feedlots with under 300 animal units must obtain, for operation and management, an Interim Permit (for hazards not subject to corrective measures agreement) that requires hazards be corrected within 24 months, an NPDES permit (if designated as a CAFO), or an SDS permit (if construction differs from technical standards)

5.0 Permit Coverage

Landowners with more than 10 AUs are required to apply for a state feedlot permit whenever one of the following conditions occurs (MPCA, 2000b):

- A new feedlot or manure storage area is constructed (i.e., construction approval is required).
- A feedlot is expanded or modified.
- A change in ownership occurs.
- An existing feedlot is restocked after being abandoned for more than 5 years.
- Inspection by MPCA staff determines the feedlot is a potential pollution hazard.
- The feedlot is near a shoreline (less than 300 feet from a river or less than 1,000 feet from a lake).

If outside shoreland, a permit is required for landowners with 50 AUs or greater.

MPCA defines AUs as the average weight of the animal divided by 1,000 pounds (Chapter 7020.0300 of Minnesota Rules). In Minnesota, one mature dairy cow equals 1.4 AUs, one horse

and one slaughter steer equal one AU each, and one chicken is 0.01 AU (MPCA, 2000b).

NPDES permits are required for operations larger than 1,000 AUs that have the potential to discharge to state waters. However, if any livestock, regardless of the number, cause a pollution hazard to state waters, a permit application must be submitted (MPCA, 2000b).

6.0 Permit Conditions

Approvals

An Environmental Assessment Worksheet (EAW) is required for new construction of, or additions to, livestock facilities that will house 2,000 AUs or more in a total confinement system and/or 1,000 AUs in a partial confinement system. An EAW can also be required of any feedlot by petition of 25 people. If an EAW is required, no permits can be issued until the process is completed (MPCA, 2000b).

To complete a state permit application and seek approval for operating an animal waste management system an applicant must have the following:

- A manure management plan that accounts for all manure produced by the facility
- A signed agreement by neighbors when a manure management plan involves neighboring property
- A soil boring record for underground earthen manure storage sites and seepage limits of less than 1/16 inch per day
- Plans prepared by a U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) qualified engineer for all earthen storage basins or any manure storage facility with a 500,000-gallon capacity or more
- For any new or expanding feedlot with the capacity of 500 AUs or greater, landowners and residents require notification of the proposed facility within 10 days of submitting the permit application. The notification must be made in person, by first class mail, or by general circulation in the local newspaper.

Lagoon Design and Specifications

Standards for constructing liquid manure storage for facilities with 1,000 or more animal units include 9-month storage capacity, seepage limits for liner types, plans and specifications designed by an engineer, notifications, and reports, location restrictions and separation to bedrock restrictions. With the exception of the 9-month storage capacity requirement, these same provisions apply to facilities with 300 - 999 animal units.

By October 1, 2001 unpermitted or non-certified liquid manure storage areas at facilities with 1,000 or more animal units must be closed, reconstructed pursuant to current standards, verified as in compliance with original standards, certified per NRCS (if plans prepared by NRCS), demonstrate compliance with seepage test, and conduct soil investigation to demonstrate compliance with construction standards (the compliance date is October 1, 2005 for facilities with 300 - 999 animal units).

Discharge Rules

Operations with 1,000 or more animal units or more must not discharge manure or process

wastewater to waters of the state. Stockpile runoff cannot discharge to waters of the state. A feedlot is also considered a potential pollution hazard if the manure storage facility will cause a significant runoff of manure to surface waters during a 25-year, 24-hour rainstorm or uncontrolled seepage of pollutants into ground water (MPCA, 2000b).

Waste Management Plans

Manure management plans must be developed for operations with 1,000 or more animal units. Manure management plans must also be submitted by operations with 300 - 999 animal units when submitting their permit applications. Such plans are also required after January 1, 2005, where manure is not applied by a commercial animal waste technician or a certified private manure applicator.

Separation Distances

New feedlots cannot be located in shoreland (within 300 feet of a river or stream or within 1,000 feet of lake, pond or flowage), in a 100-year flood plain, within 300 feet of a sinkhole, within 100 feet of a private well or within 1,000 feet of a community water supply well (with limited exceptions). Neighbors within 5,000 feet must be notified within 10 days of submitting a permit application.

Additional protective measures are required for application of manure in special protection areas (land within 300 feet of lakes streams, intermittent streams - excluding grassed waterways - public waters wetlands and drainage ditches without protective berms). Winter application is prohibited in these areas. Other requirements vary depending on whether there is a permanent vegetated buffer along the water or waterway (i.e., where permanent vegetated buffer extends 100 feet from lakes and streams and 50 feet from other waters, and no manure is applied within buffer, no other land application restrictions in these special protection areas. Where there is no vegetated buffer, the producer must maintain a 25-foot setback, incorporate the manure within 24 hours, and apply in way that does not result in long-term soil phosphorus accumulation.

Land Application Requirements

Manure application must be limited so that plant available nitrogen from all sources does not exceed crop nitrogen needs for non-legumes and expected nitrogen removal for legumes. Manure from storage areas holding manure from more than 1,000 animal units must be tested for nitrogen and phosphorus annually for the first three years and once every four years thereafter. Soil phosphorus testing is required once every four years for fields receiving manure. Records must be kept of manure nutrient tests, filed locations, rates and dates of applications, available nutrients from manure and fertilizer, and soil tests.

7.0 Enforcement Information

From 1990 to 1997, MPCA issued 694 permits to feedlots (MPCA, 2000a). During the same period, MPCA initiated 56 enforcement actions (MPCA, 1999).

Inspection Programs

Agena (1994) reported that although inspections are infrequent and primarily complaint driven, some facilities must submit annual manure disposal records to the state. EPA (1998) reports that

there are 1,000 inspections a year. Site appraisals are also required before development.

USDA-NRCS conservation officers are sometimes requested to assist in conducting inspections at feedlots.

8.0 Voluntary Programs

The Minnesota Department of Agriculture (MDA) administers a low interest loan program in coordination with the Soil and Water Resources Board and the County Soil and Water Conservation Districts. The Agricultural Best Management Practices Loan Program offers low interest loans to help implement water quality improvement practices such as animal waste control structures (MPCA, 2000b).

The Soil and Water Resources Board, with help from the County Soil and Water Conservation Districts, manages the cost share assistance program. Cost share funds can cover up to 75 percent of the expense for a feedlot project. To be eligible for cost share assistance, projects must receive approval from the Board before construction begins (MPCA, 2000b).

9.0 Additional State-Specific Information

Cooperative Extension Service

Information regarding the University of Minnesota Extension Service can be obtained at www.extension.umn.edu/.

Comprehensive Nutrient Management Plan (CNMP) Certification

Minnesota does not have a CNMP preparer certification program. Animal feedlots with more than 1,000 AUs must prepare and submit a manure management plan to the Commissioner of the Pollution Control Agency or a delegated county (MPCA, 2000c).

The Soil and Water Conservation District (SWCD), USDA-NRCS, or the Minnesota Extension Service (MES) office in each county can assist with manure management plans. The organizations often run educational seminars and farm tours to provide information about manure management. The county SWCD, NRCS, or MES office has access to the Manure Application Planner computer program used to calculate the amounts of manure to apply. In addition, the MDA Internet site has a list of consultants, laboratories, and contractors available to help producers develop manure management plans (MPCA, 2000c).

MDA's Agriculture Development Division has a Feedlot and Manure Management Advisory Committee (FMMAC), that has produced several manuals to assist livestock owners with manure management (MDA, 2000).

Case Studies/Innovative Programs

Currently, there are no odor control rules, but a task force convened by the Feedlot and Manure Management Advisory Committee made recommendations for the development of an odor rating guide to be used by counties when regulating livestock confinement areas.

In early 1997, MPCA gave public notice of its intent to develop and issue general NPDES

permits for feedlots operating with more than 1,000 AUs. On the recommendation of the Feedlot Manure Management Advisory Committee, MPCA withdrew the general permit from public comment after initial public comment indicated that it would be contested. Currently, MPCA is revising the general permit language to address issues raised by the public and may place the general NPDES Permit on public notice again (MPCA, 1997).

MPCA established a Feedlot Phone Helpline to help feedlot owners who have questions about their operations. The toll free number is 1-877-333-3508.

Minnesota's Environmental Quality Control Board is conducting a multimillion dollar 3-year study of the impact of the state's livestock industry, which is expected to be completed in 2001. A statewide inventory of the location of the state's feedlots, the species, and the numbers of animals being raised will be included in the study. For specific information regarding the study, contact Susan Schmidt at 651-296-2888 or animal.ag@mnplan.state.mn.us.

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Mississippi's CAFO Program

1.0 Background

Based upon information provided to EPA by USDA it is estimated that there are 903 AFOs with from 300 to 1,000 animal units and 429 AFOs with more than 1,000 animal units in Mississippi. These are primarily in the broiler sector (USDA, 1999; USDA, 2000).

In 1998, agriculture was Mississippi's number one industry, employing more than 30 percent of the state's workforce and valued at \$4.6 billion (USEPA, 1998). Livestock production in Mississippi includes approximately 750,000 beef farms and 60,000 dairy cattle. Farmers also produce approximately 325,000 hogs and 500 million broilers annually (MSU-ES, 1999). The production and sale of meat animals was worth \$275 million to the state in 1996. The growth of swine and poultry facilities in Mississippi is creating concerns for potential impacts to water quality (USEPA, 1998).

2.0 Lead Regulatory Agency

Mississippi Department of Environmental Quality (MDEQ), Office of Pollution Control, Surface Water Division administers the wastewater programs and enforces the NPDES requirements. Information about MDEQ, the Office of Pollution Control, and the Surface Water Division can be found at www.deq.state.ms.us/newweb/homepages.nsf.

3.0 State Regulations Regarding AFOs/CAFOs

State regulations regarding animal feedlots are the Wastewater Regulations for NPDES Permits Amended August 24, 1995. These regulations can be found at [www.deq.state.ms.us/newweb/opchome.nsf/pages/surfaceWaterfiles/\\$file/wwregs.pdf](http://www.deq.state.ms.us/newweb/opchome.nsf/pages/surfaceWaterfiles/$file/wwregs.pdf). Mississippi animal feeding operations are subject to the state's ambient air quality standards, including the odor standard, and to water permit provisions designed to control odor, vectors (pests), and water pollution (Mississippi Commission, n.d.).

In 1998, the Mississippi legislature issued a 2-year moratorium on permits from CAFOs submitted after February 1998.

The Mississippi Commission on Environmental Quality (Commission) is considering the adoption of revised regulations governing the siting, design, construction, and operation of animal feeding operations in Mississippi. These revisions would be made in the Commission's water pollution control regulations (WPC-1), which currently address permitting regulations for these facilities. Additionally, the Commission is considering a regulatory revision to the air permit regulations, that would exempt existing animal feeding operations from obtaining a separate air permit. Although the draft regulations were to be developed by the end of 1999, the Commission has not yet compiled draft regulatory revisions (Mississippi Commission, n.d.).

4.0 Types of Permits

NPDES

Mississippi has the authority to issue individual and general NPDES permits (Linville, 1997).

Other

State individual and general Animal Waste Permits are issued to smaller facilities (i.e., facilities that fall outside of the federal CAFO definition).

Under Regulation APC-S-2 (amended June 24, 1999), which is administered by the Commission, new and expanding CAFOs that have been issued NPDES permits are required to submit an application for a state air pollution control permit or a multimedia permit. The permit application should be submitted at least 180 days prior to the expiration of the operation's NPDES permit (Mississippi Commission, 1999).

5.0 Permit Coverage

All CAFOs that meet the federal regulatory requirements of 40 CFR Part 122.23 must apply for an NPDES permit. Any facility that causes pollution to waters of the state requires an individual permit or must seek coverage under a general permit.

All animal feedlots, Grade A dairies, poultry operations with 10,000 or more birds, swine operations with 10 or more sows or 50 or more swine, livestock sale barns averaging more than 50 head per day or 350 head per week, or any other confined animal operations that may pollute state waters need a permit (MSU-ES, 1999).

6.0 Permit Conditions

Approvals

To apply for a state animal waste disposal permit or seek coverage under a general permit, all CAFOs that do not meet the federal regulatory requirements of 40 CFR Part 122.23 must submit a waste treatment/disposal design worksheet and request an on-site inspection. On-site inspections and waste treatment/disposal design worksheets are required before permitting to ensure compliance with siting criteria.

Lagoon Design and Specifications

A lagoon should be deep enough to have a liquid depth of at least 6 feet above the sludge layer for normal operation. It must also be designed to hold waste for at least 90 days, to store a 25-year, 24-hour rainfall without overflowing, and to handle future waste from feedlot expansion. Additionally, the top of a lagoon's embankment should be at least 24 inches above the storm storage (freeboard) to offer protection from overflow. Depending on the soil conditions, a lagoon may need a liner (usually 12 inches of compacted clay at the bottom and sides) to prevent ground water seepage. Levees around a lagoon should be at least 8 feet wide at the top and wider if the levee is higher than 12 feet. For mowing and maintenance purposes, outside levee slopes should be constructed at a 3 to 1 ratio and inside levee slopes at a 2.5 to 1 ratio. Animal feedlot owners should consult with their local Soil and Conservation Service, county Extension office, or a Professional Engineer to meet lagoon design requirements (MSU-ES, 1999).

Discharges

State Animal Waste Permits prohibit discharges except those caused by a 24-hour, 25-year rainfall event.

Waste Management Plans

Animal waste management plans are specific to each individual farm. They are based on the type of livestock operation, existing facilities and equipment, plans for future expansion, cropping systems, the need for disposing of animal carcasses, the land area available for nutrient application, and other factors that might influence how waste should be managed. Waste management plans should include annual soil testing, waste application records on crops and fields, and equipment calibration for accurate, uniform waste application. Finally, waste management plans should include a nutrient analysis to determine the value of waste as fertilizer. For more information, consult the county Extension office or county Soil Conservation Service office (MSU-ES).

Separation Distances

Any facility designed for the treatment and disposal of animal wastes or the housing of confined animal growing operations (except for broiler poultry operations that generate dry litter and do not use a continuous overflow watering system) must be at least 1,000 feet from the nearest unowned occupied dwelling or commercial establishment and at least 300 feet from the adjoining property line (MSU-ES, 1999).

Broiler pullets, broiler breeders, and broilers in a poultry operation that generate dry litter must be 600 feet from the nearest unowned dwelling or commercial establishment and at least 150 feet from the adjoining property line. In the event that buffer zone requirements cannot be met the Permit Board can consider requests for an exception or variance from the requirements. Land application of dry litter must be at least 25 feet from the nearest adjoining property line and at least 150 feet from the nearest unowned occupied dwelling.

Land Application Requirements

Land application of animal waste (excluding dry litter waste) must be at least 300 feet from the nearest adjoining property line and at least 1,000 feet from the nearest unowned occupied dwelling. Although not yet required by law, land applied waste should be at least 100 feet from a private drinking well and other water sources (MSU-ES, 1999).

7.0 Enforcement Information

No information was found in publically available sources.

8.0 Voluntary Programs

The Nonpoint Pollution Control Program is a technical outreach program that addresses pollution caused by rainfall runoff from agriculture and other sources. The program focuses on educational and technical exchange. Through this program several best management practices have been developed for controlling nonpoint source pollution.

9.0 Additional State-Specific Information

Cooperative Extension Service

The Mississippi State University Extension Service (MSU-ES) provides research-based

educational programs and information to improve the economic, social, and cultural well-being of those people living in Mississippi. The Extension, which is a cooperating partner with Alcorn State University, provides current research and educational information in all 82 counties of Mississippi. MSU-ES works in a number of areas, including Agriculture and Natural Resources. Within this program area are a number of other programs specifically for beef, dairy, swine, and poultry. Within these specific programs, MSU-ES encourages animal operation owners and operators to use animal waste as fertilizer to help farmers comply with environmental laws, to recover nutrients that would otherwise be lost, and to reduce fertilizer costs (MSU-ES, 1999). More information about MSU-ES can be found at <http://ext.msstate.edu/>.

Comprehensive Nutrient Management Plan (CNMP) Certification

Mississippi does not have a comprehensive nutrient management plan (CNMP) preparer certification program. Mississippi's NPDES Animal Waste Permits are required to document the implementation of Best Management Practices (BMPs). All permitted facilities must have a pollution prevention plan. The pollution prevention plan is not required to be prepared by a certified preparer. An animal waste management plan developed by the U.S. Department of Agriculture Soil Conservation Service can be substituted for the BMP and pollution prevention plan (MDEQ, 2000).

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Missouri's CAFO Program

1.0 Background

Based upon information provided to EPA by USDA it is estimated that there are 600 AFOs with from 300 to 1,000 animal units and 315 AFOs with more than 1,000 animal units in Missouri. These are primarily in the swine sector (USDA, 1999; USDA, 2000).

Missouri has experienced an increase in large hog and poultry operations. In 1995 a series of spills from two of the largest hog operations in the state led to legislation passed in 1996 that requires the Missouri Department of Natural Resources (MDNR) to strengthen its CAFO regulatory program (USEPA, 1998).

2.0 Lead Regulatory Agency

The Missouri Department of Natural Resources (MDNR) enforces and administers the water pollution control program. Information regarding this program is located at www.dnr.state.mo.us/deq/wpcp.

3.0 State Regulations Regarding AFOs/CAFOs

Basic information regarding Missouri's Code of State Regulations can be found at <http://mosl.sos.state.mo.us/csr/>. The following sections of the CSR regulate AFOs and CAFOs:

- CAFO operation, construction, and NPDES operating permits are regulated by Missouri Revised Statutes (RSMO) 644 and 640.700 through 640.750. The applicable rules are 10 CSR 20-6.010, 20-6.300, 20-8.020, 20-8.500, 20-7.015, and 20-7.031.
- Land application, construction, and NPDES operating permits are regulated by RSMO 644 under the following applicable rules: 10 CSR 20-6.010, 20-6.011, 20-6.015, 20-6.200, 20-7.015, 20-7.031, 20-8.020, and 20-8.500.
- Missouri's Clean Water Law is at RSMO 644.
- The CAFO permit rule is at 10 CSR 20-6.300.
- Certification of CAFO waste management operators is regulated by 10 CSR 20-14.020.
- CAFO design regulations are at 10 CSR20-8.020.
- CAFO effluent regulations are at 10 CSR20-7.015 (9)(g).

4.0 Types of Permits

NPDES

The state of Missouri administers the NPDES permitting program. Missouri issues individual NPDES permits to CAFOs and provides authorization under general permit G01 for CAFOs. CAFO NPDES permits regulate no discharge waste management collection, holding, treatment and land application systems (MDNR, 2000b).

Other

Construction and operating permits are required for all CAFOs. Construction and operating permits regulate land application of liquid or solid residue from domestic or industrial operations and associated waste storage, treatment facilities, and distribution systems. Land application includes wastewater irrigation, biosolids land application, composting facilities, and similar activities (MDNR, 2000b).

5.0 Permit Coverage

CAFOs include animal feeding operations larger than 1,000 animal units and some animal feeding operations sized between 300 and 999 animal units (MDNR, 2000b).

All CAFOs must receive NPDES permits or be covered under the general permit. The state of Missouri has developed a classification scheme for concentrated animal feeding facilities based on capacity. This allows managers to develop/apply regulations based on the size and potential impact of a concentrated animal feeding facility. The classes of animal feeding operations in Missouri are as follows:

- *Class IA* - Any concentrated animal feeding operation with a capacity of 7,000 animal units or more.
- *Class IB* - Any concentrated animal feeding operation with a capacity of at least 3,000 animal units, but less than 7,000 animal units.
- *Class IC* - Any concentrated animal feeding operation with a capacity of at least 1,000 animal units, but less than 3,000 animal units.
- *Class II* - Any concentrated animal feeding operation with a capacity of at least 300 animal units, but less than 1,000 animal units.

Class IB, IC, and II CAFOs are covered under Missouri's general NPDES permit. Class IA facilities must seek an individual NPDES permit. All Class I facilities are subject to state construction and operating/permitting requirements. Permits are not required for AFO operations with less than 300 animal units when the operation uses best management practices approved by MDNR. Permits are not required for AFOs with 300 to 999 animal units if there is no discharge.

6.0 Permit Conditions

Approvals

State construction and operating approvals are required for facilities with more than 1,000 animal units (Agena, 1994). Also, public notice is required for Class IA facilities and the owner/operator must issue neighbor notices before expanding animal feeding operations. Voluntary letters of approval may be issued at a facility's request.

Lagoon Design and Specifications

10 CSR 20-8.200 regulates wastewater treatment ponds (lagoons).

Storage structures must have between a 90- and 365-day capacity depending on the location and agronomic condition of the application site (NASDA, 1997). A site appraisal by a design engineer is required to ensure that earthen storage structures are constructed to have at least a 4-foot distance between the lagoon bottom and ground water (NASDA, 1997) and to keep lagoon seepage to 1/8 to 1/16 inch a day based on the pollution potential of the waste control facility (Agena, 1994).

Class 1A facilities with wet waste handling technologies that MDNR deems a risk to any drinking water supply or aquatic life or that are within 300 feet of an adjacent landowner must have a containment structure that can contain a minimum volume equal to maximum flushing in any 24-hour period (640.730). All wet animal waste handling facilities are required to have an automatic shutoff in the event a pipe becomes blocked (RSMO 640.725).

Discharge Rules

No discharge is allowed for Class I facilities except as a result of a 24-hour, 25-year storm event.

Waste Management Plans

To receive construction approval, an applicant must include a waste handling plan (RSMO 640.715 or 10 CSR 20-8.020(15)).

Separation Distances

Separation distance requirements are stated at Chapter 640, Section 640.710. This section is available at www.moga.state.mo.us/statutes/c600-699/6400710.htm.

All new animal waste control facilities must be 1,000 to 3,000 feet from any public building or residence depending on the facility's capacity (NASDA, 1997). Operations with at least a 1,000 animal unit capacity must be 1,000 feet from dwellings. Class IA and IB facilities must maintain a separation distance from public buildings and residences of 3,000 and 2,000 feet, respectively. A 50-foot separation distance between property lines is mandated for all storage facilities and land application (NASDA, 1997), and distances of 50 feet from intermittent streams, 100 feet from permanent flowing streams, and 150 feet from dwellings must be maintained. The animal waste control facilities and land application sites of CAFOs must be 300 feet from water wells and sink holes.

Class IA feeding operations are prohibited in Outstanding Natural Resource Water National River areas and their watersheds (ASIWPCA, 1997 and 10 CSR 20-6.300).

Land Application Requirements

Hydraulic application rate (inch/hour) is based on soil and slope. Land application is based on agronomic nitrogen requirements, but higher rates of application are allowed if the land available for waste disposal is limited. Other limitations may be required where appropriate to protect water quality. Land treatment is regulated by 10 CSR 20-8.220.

Application rates are determined for each individual site based on topography, soils, geology, hydrology, weather, agricultural practice, adjacent land use, and application method. A balance calculation for water and each significant parameter should be prepared to show that the system

performance meets the requirements of 10 CSR 20-7.031, Water Quality Standards.

7.0 Enforcement Information

Inspection Programs

Operators of any "flush" manure management system (i.e., any system that uses liquid as the primary agent for moving manure) must visually inspect the waste handling facility and lagoons for unauthorized discharges at least every 12 hours and maintain a record of each inspection (General Assembly of the State of Missouri House Bills 1207, 1288, 1408, and 1409).

In compliance with House Bills 1207, 1208, 1408, and 1409, MDNR conducts routine on-site inspections (NASDA, 1997). Class IA facilities are inspected quarterly, while other animal feeding operations receive annual inspections (USEPA, 1998).

8.0 Voluntary Programs

The Letter of Approval is voluntary for animal feeding operations that are not CAFOs. Voluntary approval of "no-discharge" waste management systems for animal feeding operations are exempted from permitting requirements (MDNR, 2000b).

Voluntary operator certification is available for CAFO operators and supervisors at facilities that are exempt.

The Department of Natural Resources has a technical assistance program.

9.0 Additional State-Specific Information

Cooperative Extension Program

Information regarding the University of Missouri, Lincoln University, Outreach and Extension program is located at <http://extension.missouri.edu>.

Operator Training and Certification

MDNR requires waste system operators to be trained and certified (NASDA, 1997). Missouri regulations classify CAFO waste management system operators into four categories (10 CSR 20-14.010):

- CAFO supervisors
- CAFO assistant supervisors
- CAFO operator
- CAFO operator trainee

Each category of operator is defined by level of experience and knowledge of waste management system operation. MDNR issues a certificate of competency to a CAFO operator after successful completion of course work and a passing score on a state exam.

10 CSR 20-14.020 requires certification for Class IA wet handling CAFO waste management systems. All persons performing the duties associated with operating CAFO operations defined

as Class IA wet handling CAFO waste management systems must apply for CAFO waste management operator certification.

Missouri offers three levels of certification for CAFO supervisors—levels A, B, and C. The certification levels are based on the type of waste management system and are determined based on the number of points assigned to a waste management system.

Case Studies/Innovative Programs

Chapter 640, Section 740, established a Concentrated Animal Feeding Operation Indemnity Fund to fund the closure of abandoned CAFOs that have been placed in the control of the government due to bankruptcy or failure to pay property taxes, or that are abandoned property.

CAFO Odor Rule

On March 25, 1999, the Missouri Air Conservation Commission voted unanimously to adopt amendments to the odor regulations. This brought 19 existing Class IA CAFOs under regulation. The final version was published in the briefing document for the March 1999 Missouri Air Conservation Commission meeting along with a summary of comments and responses (MDNR, 2000a).

The rule adopted by the commission calls for each source to submit an odor control plan by July 1, 2000. The odor control plan must identify all sources of odor and detail how these odor emissions will be addressed by the facility. An interim progress report is due on March 1, 2001. The deadline for full implementation of odor controls is January 1, 2002. After January 1, 2002, the source becomes subject to an odor standard that is similar to the odor standard applicable to other statewide industries (MDNR, 2000a).

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Montana's CAFO Program

1.0 Background

Based on information provided to EPA by the U.S. Department of Agriculture (USDA), in the year 2000 it is estimated that there are 60 AFOs with 300 to 1,000 animal units and 50 AFOs with more than 1,000 animal units in Montana. These are primarily in the beef sector (USDA, 1999; USDA, 2000).

In response to the EPA Office of Enforcement and Compliance Assurance's issuing the *Compliance Assurance Implementation Plan for Concentrated Animal Feeding Operations (CAFOs)*, the Montana Department of Environmental Quality (MDEQ) has developed a corresponding strategy for Montana in accordance with the requirements of the EPA. The strategy for Montana contains the following eight components to address the control of pollution from AFOs:

- Prioritizing watersheds for AFO compliance
- Providing assistance and incentives for AFO compliance
- Compliance coordination with federal, state, and local governments and agencies
- Describing enforcement authority
- Processing complaints of AFO water quality impacts and enforcement
- Targeting AFOs for inspections
- Scheduling of AFO inspections
- Monitoring AFO compliance

Specific information about Montana's *Strategy for Improving Water Quality Compliance from Concentrated Animal Feeding Operations* and the strategy's eight components for addressing pollution can be found at www.deq.state.mt.us/wqinfo/WaterDischarge/StrategyFinal.pdf.

2.0 Lead Regulatory Agency

Montana Department of Environmental Quality (MDEQ) administers the MPDES program. The requirements of the MPDES, as they apply to CAFOs, mirror the requirements of the NPDES program. Information about the Department can be found at www.deq.state.mt.us/.

3.0 State Regulations Regarding AFOs/CAFOs

In 1972 Montana passed a new constitution that guaranteed every citizen an inalienable right to a "clean and healthful environment," and in the decade that followed, the Legislature passed strong environmental laws, including the Montana Water Quality Act. Montana Water Quality Act 75-5-101 still addresses discharges from CAFOs; however, revisions to the act in 1995 and 1997 removed some of the it's original protection of state waters. In 1998 MDEQ adopted a proposal to increase the levels of allowable nitrate pollution in about 30 percent of Montana's ground water—water that MDEQ's director felt was already too polluted to be usable (NRDC, 1998). Specific language from the Water Quality Act can be found at www.deq.state.mt.us/enf/laws.htm.

CAFO discharges are also addressed by the Administrative Rules of Montana (ARM) 17.30.1301 et seq. (Montana Pollution Discharge Elimination System [MPDES]) and ARM 17.30.1001 et seq. (Montana Ground Water Pollution Control System [MGWPCS]) (MDEQ, n.d.c). Specific language from the MPDES and MGWPCS rules can be found at www.deq.state.mt.us/dir/Legal/

[Chapters/Ch30-13.pdf](#) and www.deq.state.mt.us/dir/Legal/Chapters/Ch30-10.pdf, respectively.

4.0 Type of Permits

NPDES

MDEQ's Water Protection Bureau issues the MPDES general permit. To obtain an MPDES permit, a CAFO owner or operator must complete the *Application for Permit to Discharge—Short Form B* (www.deq.state.mt.us/wqinfo/WaterDischarge/SHORT-B.PDF) and pay a \$200 application fee. The application form requests information on facility ownership, physical surroundings, location, size, and waste control and land application practices (MDEQ, n.d.b). The general discharge permit became effective September 1, 1999, and expires August 30, 2004 (MDEQ, 1999).

Other

Discharges to ground water may require a Montana Ground Water Pollution Control System permit instead of an MPDES permit.

5.0 Permit Coverage

CAFOs, as defined by 40 CFR Part 122 Appendix B, are required to apply for coverage under an MPDES permit, which applies to discharges to surface water and ground water and discharges related to construction and dewatering. An animal feeding operation is considered a CAFO when it contains more than 1,000 animal units (AUs); contains between 301 and 1,000 AUs and a discharge occurs through a man-made conveyance or pollutants are discharged directly into state waters that originate outside the facility; or it is designated as a CAFO on a case-by-case basis by MDEQ (MDEQ, n.d.a.). MDEQ must conduct a site inspection prior to designating an operation with 301 AUs as a CAFO and requiring a permit (MDEQ, n.d.b).

A permit is required to construct, modify, or operate a disposal system or to construct and use any outlet for discharge of industrial waste into state waters.

6.0 Permit Conditions

Approvals

Applications for general MPDES permits must be submitted 30 days before the initiation of a proposed discharge. Applications for individual MPDES permits must be filed at least 180 days before the operation of a point source. An applicant must provide the permitting authority with waste disposal system plans and specifications and process and waste flow diagrams (MDEQ, n.d.c).

Lagoon Design and Specifications

No information was found in publically available sources.

Discharge Rules

Discharge of pollutants to surface waters of the state from a CAFO may occur only when rainfall

events, either chronic or catastrophic, cause an overflow from a facility designed, constructed, and operated to contain all process-generated wastewater plus the runoff from a 25-year, 24-hour storm (MDEQ, n.d.a).

Discharge of pollutants to state ground waters may occur only when seepage or leachate from a CAFO, combined with the volume of ground water beneath the source, results in a ground water nitrate-nitrogen concentration of less than 7.5 milligrams per liter. Ground water contamination from animal feeding operations most often results from leaking storage ponds and surface accumulations of solid manure, and placement of confined animals on coarse-textured soil over shallow ground water (MDEQ, n.d.b).

Waste Management Plans

No information was found in publically available sources.

Separation Distances

No information was found in publically available sources.

Land Application Requirements

The CAFO general MPDES permit allows producers some flexibility in terms of the land application they choose, but the permit requires producers to apply nutrients in a manner that results in plant uptake of those nutrients during the growing season following application. No animal waste may enter surface water, and nitrate-nitrogen discharge to ground water is limited to 10 mg/L (NRDC, 1998).

7.0 Enforcement Information

MDEQ may issue a "notice of violation" to a CAFO that does not comply with its general MPDES permit. In some cases, MDEQ may require violators to perform additional monitoring or correct equipment problems in lieu of assessing penalties (NRDC, 1998).

8.0 Voluntary Programs

No information was found in publically available sources.

9.0 Additional State-Specific Information

Cooperative Extension Service

Montana State University Extension Service has an agricultural program that provides information about livestock and natural resources. More information about the Extension Service can be found at <http://extn.msu.montana.edu/>.

Comprehensive Nutrient Management Plan (CNMP) Certification

Montana does not have a comprehensive nutrient management plan (CNMP) preparer's certification program. However, Montana Code 75-5-101 requires that all CAFOs with 1,000 or more animal units have on-site and implemented a CNMP. The CNMP does not need to be

prepared by a certified preparer, nor does it need MDEQ's approval (MDEQ, n.d.a).

Additional Information

Contact MDEQ at 406-444-1454 for questions pertaining to the CAFO permitting process.

10.0 References

- MDEQ. N.d.a. *General Permit Fact Sheet for Concentrated Animal Feeding Operations (CAFO)*. Montana Department of Environmental Quality. <www.deq.state.mt.us/wqinfo/WaterDischarge/fact-sheet.pdf>. Accessed November 2000.
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Nebraska's CAFO Program

1.0 Background

Based upon information provided to EPA by USDA it is estimated that there are 880 AFOs with 300 to 1,000 animal units and 620 AFOs with more than 1,000 animal units in Nebraska. These are primarily in the beef and swine sectors (USDA, 1999; USDA, 2000).

Nebraska began its livestock permit program in 1972 and has issued NPDES permits to CAFOs since 1974. In April 1998 new legislation was passed that established a permit fee system, a task force to review the need for financial assurance plans, and a training program for land application of wastes (USEPA, 1998). Nebraska has a mix of very large cattle farms with a large number of medium-small cattle feeding operations (USEPA, 1998). In FY 1999, the livestock permit program issued 123 construction permits and 85 state operating permits (NDEQ, 2000a).

2.0 Lead Regulatory Agency

The Nebraska Department of Environmental Quality (NDEQ) regulates the discharge of livestock wastes into the waters of the state in accordance with the NPDES Program. NDEQ also has regulatory and permitting authority over livestock waste control facilities under State Title 130, Rules and Regulations Pertaining to Livestock Waste Control. The Livestock Waste Control Program administers and enforces Title 130, which currently is being revised to comply with changes in statutes. This new legislation was originally passed in April 1998, but two revisions of the Rule occurred in 1999 (NDEQ, 2000a).

3.0 State Regulations Regarding AFOs/CAFOs

Title 130 of the Nebraska Administrative Code, Rules and Regulations Pertaining to Livestock Waste Control, became effective February 28, 2000. It is available at www.deq.state.ne.us/RuleAndR.nsf/pages/130-TOC. The intent of the Livestock Waste Management Act is to prevent water pollution through better regulation of livestock waste control facilities. The major changes mandated by the Livestock Waste Management Act, implemented by the revised Title 130, are the following (NDEQ, 2000d):

- Fees for inspections, and construction and operating permits .
- A classification system for livestock operations, based on animal units.
- A requirement for all livestock operations to request an inspection by NDEQ by January 1, 2000, unless the operation previously had been permitted or exempted, had less than 300 animal units, or was a calving operation that confined livestock less than 90 days a year.
- Provisions for determining a "bad actor" – a livestock producer/manager/owner who has previously violated environmental laws.
- Tighter construction requirements on larger livestock waste lagoons to reduce seepage.
- Public notices on applications from livestock operations with more than 1,000 animal units.
- A requirement for a licensed Professional Engineer to complete permit applications.
- Restrictions on livestock waste control facilities in cold water Class A stream watersheds.

In 1999 the 1998 Livestock Waste Management Act (LB1209) was amended by the passage of LB870 and LB822. Under LB870, livestock operations with less than 300 animal units were exempted from the act's inspection and permitting requirements unless the operation has had a confirmed discharge or the Department determines a high potential exists for a discharge to

waters of the state. LB870 also requires public notice of complete applications for livestock waste control facilities (LWCFs) at operations with more than 1,000 animal units, set late fees for failure to submit inspection requests, and modified professional engineering requirements. LB822 prohibits livestock operations with more than 1,000 animal units from locating in cold water Class A stream watersheds (NDEQ, 2000a).

4.0 Types of Permits

NPDES

The Livestock Waste Control Program issues NPDES permits.

Other

Livestock operations may be required to apply for and obtain construction and operating permits for LWCF. Plans and specifications must be reviewed by livestock permit program engineers to ensure compliance with established standards. When these plans and specifications are approved by NDEQ, a construction permit can be issued. Operating permits are issued after the livestock operation certifies that the LWCF was constructed in accordance with the plans and specifications approved by the Department. Prior to issuing an operating permit, the Department conducts a post-construction inspection (NDEQ, 2000a).

The following other documents may be required with the NPDES permit application form (NDEQ, 2000c):

- Sludge Management Plan
- Operational and Maintenance Plan
- Facility Closure Plan
- Best Management Practices for Odor (required of all Class II, III, and IV facilities)
- Emergency Response Plan

5.0 Permit Coverage

The Livestock Waste Management Act established a classification system for LWCFs based on the maximum number of animal units for which a waste control facility is designed. Nebraska uses the federal definition for an animal unit. The classifications of livestock operations are as follows (NDEQ, 2000b):

- Class I: A facility designed for 1,000 animal units or less
- Class II: A facility designed for 1,001 through 5,000 animal units
- Class III: A facility designed for 5,001 through 20,000 animal units
- Class IV: A facility designed for 20,001 animal units or greater

Legislation passed in April 1998 included provisions that require all feedlots, regardless of size, to register with the state (USEPA, 1998).

6.0 Permit Conditions

Approvals

A site inspection is required to determine the need for an LWCF, prior to permitting.

Lagoon Design and Specifications

Permit applicants are required to submit design plans that meet state technical standards and facility location requirements. Permits may require operators to meet designated waste capacity requirements, design standards, disposal requirements, and monitoring requirements. A liquid manure storage pit or tank, a holding pond, or a combination of these must be designed to retain all livestock waste for a minimum storage period of 180 days.

The Minimum Storage Requirement is the sum of the animal waste produced (or treatment volume for an anaerobic lagoon), plus the spillage, wash water, and any flush water produced in 180 days (NDEQ, 2000c).

The minimum freeboard requirement is 1.5 feet for earthen structures and at least 6 inches for vertical-walled structures (NDEQ, 2000c).

The debris basin should be designed to provide adequate solids retention as well as sufficient capacity to detain a 25-year, 24-hour storm without overtopping (such as with USDA-NRCS flood routing criteria) (NDEQ, 2000c).

The facility should be located on soils and/or constructed with materials and construction methods that will ensure that percolation does not exceed the following rates:

- 0.25 inches per day (7.35×10^{-6} cm/sec) for a Class I facility
- 0.13 inches per day (3.82×10^{-6} cm/sec) for a Class II, Class III, or Class IV facility

Where a flexible membrane liner is used, a properly compacted soil sub-base must be constructed below the liner with a minimum thickness of six inches.

Discharge Rules

The NPDES permit prohibits discharges to waters of the state unless the area receives precipitation in excess of the 25-year, 24-hour storm event or during a chronic wet period (NDEQ, 2000a).

Waste Management Plans

Manure management plans are required prior to construction permit approval (USEPA, 1998).

Separation Distances

Livestock waste application is restricted to 30 feet of any streams, lakes, and impounded waters. NDEQ may require additional restrictions for waste application within 100 feet of stream, lakes, or impounded waters (NDEQ, 2000e).

Livestock waste application is restricted to within 100 feet of any well used for domestic purposes and within 1,000 feet of a public drinking water supply well.

The temporary zoning regulations may establish setbacks for new livestock operations or livestock facilities and prohibit them from being located within 1 mile of an incorporated city or village or within 0.25 mile of a concentration of 10 or more residences. Any temporary zoning

regulations adopted will expire July 1, 2001 (NDEQ, 2000b).

Land Application Requirements

Land application is based on the nutrient value of the wastes and soil and site characteristics.

The minimum runoff storage requirement for open feedlots is the calculated runoff produced by a 25-year, 24-hour rainfall event plus the calculated open lot and contributing drainage area runoff for the month of June, plus the net precipitation on the holding pond surface for the month of June, plus solids accumulations of at least 0.5 inch per acre of open lot, and other sources of wastewater (NDEQ, 2000c).

If runoff is diverted, the terrace, berms, or ditch should, at a minimum, be constructed to convey runoff from the 25-year, 24-hour storm event and should not be less than 1.5 feet in channel depth (NDEQ, 2000c).

7.0 Enforcement Information

Inspection Program

Under the 1998 Livestock Waste Management Act, livestock operations (regardless of size) were required to submit a Request for Inspection to NDEQ prior to January 1, 2000, unless they had a permit or had been previously exempted by the Department. By the end of 1998, NDEQ had received nearly 4,500 requests for inspection, most of them received in November and December. Of this number, 94 percent were from operations with less than 1,000 animal units. During 1999, the Department received another 1,130 requests for initial inspections (NDEQ, 2000a).

In January 1999 a joint venture between the Nebraska Department of Environmental Quality and the Nebraska Department of Agriculture (NDA) was established to assist in performing these initial inspections. This joint venture lasted through July 1999, and during this time the NDA inspectors performed approximately 400 site visits on behalf of DEQ, mostly on livestock operations of under 300 animal units. During FY 1999 (July 1998-June 30, 1999), DEQ and NDA inspectors performed initial inspections and/or site visits on 794 livestock operations (NDEQ, 2000a).

In addition to the initial inspections of existing and proposed livestock operations, program staff also conduct complaint investigations, routine operation and maintenance inspections of livestock waste control facilities, and post-construction inspections. The total number of inspections performed during FY1999, including initial inspections was 1,103 inspections (NDEQ, 2000a).

8.0 Voluntary Programs

No information was found in publically available sources.

9.0 Additional State-Specific Information

Cooperative Extension Service

Information regarding the University of Nebraska's Lincoln Institute of Agriculture and Natural Resources, Cooperative Extension can be obtained at www.ianr.unl.edu/.

Comprehensive Nutrient Management Plan (CNMP) Certification

All applications for NPDES permits must include a comprehensive nutrient management plan. Title 130, Chapter 3, 001.04H and Chapter 11 list the specific requirements. Livestock wastes are not to be applied in excess of agronomic rates for nitrogen. The requirements include sampling, testing, and recording keeping. The applicant is required to maintain these records for at least 5 years or longer, as required in the approved plan or operating permit requirements (NDEQ, 2000c).

Nebraska does not have a CNMP preparer certification program. Nebraska's Livestock Waste Control Program (Title 130, Chapter 3) requires CNMPs with each NPDES permit, but the CNMP does not need to be prepared by a certified preparer. NDEQ does not need to approve the plan (NDEQ, 2000a)

10.0 References

Agena, Ubbo. 1994. *Animal Waste Control Programs of Iowa and Eight Other States*. Iowa Department of Natural Resources, Environmental Protection Division.

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NDEQ. 2000a. *Livestock Waste Control Program*. Nebraska Department of Environmental Quality. <www.deq.state.ne.us/permitsa.nsf/pages/livestock>. Accessed September 2000.

NDEQ. 2000b. *Fact Sheet on 1999 Livestock Legislation*. Nebraska Department of Environmental Quality. <www.deq.state.ne.us/Publica.nsf/Publications+Livestock>. Accessed September 2000.

NDEQ. 2000c. *Sample Application for LWCF Permit*. Nebraska Department of Environmental Quality. <www.deq.state.ne.us/Publica.nsf/Publications+Livestock>. Accessed September 2000.

NDEQ. 2000d. *Environmental Update - Spring 2000*. Nebraska Department of Environmental Quality. <www.deq.state.ne.us/Newslett.nsf/Update>. Accessed September 2000.

NDEQ. 2000e. *Comprehensive Nutrient Management Plan*. Nebraska Department of Environmental Quality. <www.deq.state.ne.us/Publica.nsf/Publications+Livestock>. Accessed September 2000.

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- USDA. 1999. *1997 Census of Agriculture: Geographic Area Series*. U.S. Department of Agricultural Statistics Service, Washington, DC.
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- USEPA. 1993. *The Report of the EPA/State Feedlot Workgroup*. U.S. Environmental Protection Agency, Office of Wastewater Enforcement and Compliance, Washington, DC.

Nevada's CAFO Program

1.0 Background

Based upon information provided to EPA by USDA it is estimated that there are 35 AFOs with from 300 to 1,000 animal units and 20 AFOs with more than 1,000 animal units in Nevada. These are primarily in the dairy and poultry (turkey) livestock sectors (USDA, 1999; USDA, 2000).

Although Nevada's ranches are few in number, they ranked third in the nation in size and averaged 3,500 acres in 1998. Nevada agriculture focuses primarily on range livestock production. State livestock enterprises include cattle, dairy, sheep, lambs, and hogs. Although cattle and calves were the state's leading agricultural industry in 1998 (NVDOA, 1998), dairies are the largest type of animal feeding operation (AFO) requiring regulatory control. In the same year, of Nevada's 150 dairy operations, 23 had more than 200 cows and 12 had 500 to 700 cows. These dairies may be considered CAFOs if they can potentially discharge into U.S. waters. Most of the dairies are northwest of Las Vegas, in the Moapa and Amargosa Valley areas, and east of Reno, in the Yerrington and Fallon areas (USEPA, 2000). The larger cattle and sheep ranches are in northern Nevada (NVDOA, 1998).

Nevada's natural conditions tend to support proper management of animal waste. The arid climate results in rare unintentional wet weather discharges. Nevada's larger AFOs generally have ample cropland available for applying their animal waste (USEPA, 2000).

2.0 Lead Regulatory Agency

The lead regulatory agency regarding AFOs in Nevada is the Division of Environmental Protection (NDEP). Information about the Division can be found at www.state.nv.us/ndep/.

3.0 State Regulations Regarding AFOs/CAFOs

Regulations regarding water pollution control are provided in Nevada Administrative Code (NAC) 445A.228 through 445A.263, Discharge Permits (www.state.nv.us/ndep/nac/445a070.wpd). According to NAC 445A.228, Nevada may regulate discharges from facilities that confine animals for a total of 30 days or more at any time during the previous 12 months if the animals were in excess of 1,000 slaughter or feeder cattle, 700 milker or dry mature dairy cattle, 2,500 swine over 55 pounds, 500 horses, 10,000 sheep, 55,000 turkeys, 100,000 laying hens or broilers if the facility has continuous overflow watering, 30,000 laying hens or broilers if the facility has a liquid manure handling system, 5,000 ducks, or more than 1,000 units of a combination of animals (NDEP, n.d.a.).

4.0 Type of Permits

NPDES

Nevada is an NPDES authorized state. The Bureau of Water Pollution Control (BWPC) is responsible for issuing NPDES permits.

5.0 Permit Coverage

Not all animal feeding operations are required to obtain NPDES permits. Exclusions are consistent with the federal regulation.

6.0 Permit Conditions

Approvals

No information was found in publically available sources.

Lagoon Design and Specifications

No information was found in publically available sources.

Discharge Rules

The Nevada Division of Environmental Protection is working with the Nevada Division of Agriculture, the Natural Resources Conservation Service (NRCS), and the 12 largest state dairies to analyze animal waste storage options in the event of a 25-year, 24 hour storm event. This analysis will be included in the dairy permit applications (USEPA, 2000).

Waste Management Plans

No information was found in publically available sources.

Separation Distances

No information was found in publically available sources.

Land Application Requirements

No information was found in publically available sources.

7.0 Enforcement Information

No information was found in publically available sources.

8.0 Voluntary Programs

No information was found in publically available sources.

9.0 Additional State-Specific Information

Cooperative Extension Service

Although the University of Nevada, Reno, Cooperative Extension has an agricultural program, it does not provide any programs targeted at CAFOs. Information about the Extension can be found at www.nce.unr.edu/.

Comprehensive Nutrient Management Plan (CNMP) Certification

No information was available on CNMP certification in Nevada.

10.0 References

- NDEP. n.d.a. *Nevada Administrative Code, Chapter 445A, Sections 228 through 263, Discharge Permits*. Nevada Division of Environmental Protection.
<www.state.nv.us/ndep/nac/445a070.wpd> or <www.state.nv.us/ndep/admin/nrs.htm>.
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<www.epa.gov/region09/cross_pr/animalwaste/nevada.html>. Accessed October 2000.

New Hampshire's CAFO Program

1.0 Background

Based upon information provided to EPA by USDA in the year 2000 it is estimated that there are 30 AFOs with from 300 to 1,000 animal units and 4 AFOs with more than 1,000 animal units in New Hampshire (USDA, 1999; USDA, 2000).

2.0 Lead Regulatory Agency

The New Hampshire Department of Environmental Services (DES) is notified of improper manure handling practices that cannot be remedied by the Department of Agriculture and takes appropriate regulatory action. Information about DES can be found at www.des.state.nh.us/.

3.0 State Regulations Regarding AFOs/CAFOs

Title 40 Agriculture, Horticulture, and Animal Husbandry, Chapter 431 Soil Conditioners, Sections 33 through 35 (RSA 431:33 through 431:35) regulate the handling of manure, agricultural compost, and chemical fertilizers. Specific language from Chapter 431 can be found at <http://sudoc.nhsl.lib.nh.us/rsa/40/INDEX.HTM#Chapter%20431>.

The New Hampshire Coastal Nonpoint Pollution Control Program adopted agricultural pollution management measures in accordance with section 6217(c)(1) of the Coastal Zone Act Reauthorization Amendments of 1990.

4.0 Types of Permits

NPDES

New Hampshire is not an NPDES authorized state.

5.0 Permit Coverage

No information was found in publically available sources.

6.0 Permit Conditions

Permit conditions are not applicable. However, NRCS design standards are used in constructing manure storage facilities, including the 25-year, 24-hour storm capacity of storage ponds.

7.0 Enforcement Information

The commissioner of the Department of Agriculture investigates complaints of improper manure handling, including improper storage and spreading. If the commissioner determines that improper manure management is a nuisance and is caused by failing to use BMPs, the commissioner notifies the operator of necessary changes. If the changes cannot be made within 10 days, the operator must submit a compliance plan to the commissioner. Unresolved problems are referred to the local authorities and the commissioner of environmental services (RSA 431:35). Typically, New Hampshire animal waste management is handled at the local level through conservation districts and NRCS (USEPA, 1998).

8.0 Voluntary Programs

No information was found in publically available sources.

9.0 Additional State-Specific Information

Cooperative Extension Service

The University of New Hampshire Cooperative Extension has a livestock program, within which continued educational programs help to educate farm owners about environmental stewardship and other important agricultural issues. Information about the Extension and Livestock Program can be found at <http://ceinfo.unh.edu/> and <http://ceinfo.unh.edu/aglivstk.htm>, respectively.

Comprehensive Nutrient Management Plan (CNMP) Certification

New Hampshire does not have a CNMP certification program.

Additional Information

BMPs for manure management were developed in consultation with the NRCS, New Hampshire agricultural experiment station, University of New Hampshire Cooperative Extension Service, and the commissioner of environmental services. The commissioner must publish developed BMPs (RSA 431:34). Operators of confined feeding operations are required to follow published BMPs.

10.0 References

USDA. 1999. *1997 Census of Agriculture: Geographic Area Series*. U.S. Department of Agricultural Statistics Service, Washington, DC.

USDA. 2000. Specific queries conducted on the 1997 Census of Agriculture published data. U.S. Department of Agriculture.

USEPA. 1998. *Efforts to Improve Controls on Concentrated Animal Feeding Operations (CAFOs)*. Results of June 1998 Survey of States and Regions compiled by G. Beatty. U.S. Environmental Protection Agency, Office of Water, Washington, DC.

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New Jersey's CAFO Program

1.0 Background

Based upon information provided to EPA by USDA it is estimated that there are 15 AFOs with from 300 to 1,000 animal units and 6 AFOs with more than 1,000 animal units in New Jersey. These are primarily in the dairy livestock sector (USDA, 1999; USDA, 2000).

2.0 Lead Regulatory Agency

New Jersey Department of Environmental Protection is the lead regulatory agency regarding CAFOs. Information about the Department can be found at www.state.nj.us/dep/.

3.0 State Regulations Regarding AFOs/CAFOs

Administrative Code 7:14A-2.13, New Jersey Pollutant Discharge Elimination System (NJPDES), Specific Criteria for Concentrated Animal Feeding Operations, is administered through the New Jersey Department of Environmental Protection. Specific language from 7:14A-2.13 can be found at www.state.nj.us/dep/dwq/pdf/rulesgen.pdf.

4.0 Type of Permits

NPDES

New Jersey is authorized to administer the federal NPDES program.

5.0 Permit Coverage

The NJPDES requires all CAFOs, as defined in Title 40 of the Code of Federal Regulations (CFR), section 122.23 and 40 CFR 122 Appendix B, that discharge pollutants, to obtain a permit. Additionally, Administrative Code 7:14A-2.13 provides specific information for determining whether an animal feeding operation is concentrated.

6.0 Permit Conditions

Approvals

Site appraisal is required before development (NASDA, 1997).

Lagoon Design and Specifications

The state recommends following NRCS guidelines and BMPs.

Discharge Rules

No information was found in publically available sources.

Waste Management Plans

No information was found in publically available sources.

Separation Distances

No state standards for separation distances identified (local ordinances may apply) (NASDA, 1997).

Land Application Requirements

Liquid waste must be applied at agronomic rates.

7.0 Enforcement Information

Complaints and routine inspections are used to identify violators (NASDA, 1997). New Jersey has not developed any formal CAFO inspection programs, although state staff have visited NPDES-permitted race tracks (USEPA 1998).

8.0 Voluntary Programs

New Jersey Department of Agriculture has a nonpoint source pollution program that provides assistance in agricultural conservation planning, using BMPs, and the development of conservation management plans (including animal waste nutrient management). Technical assistance and cost-sharing grants are available to help eligible landowners implement BMPs. The New Jersey Department of Agriculture also provides guidance concerning the application of organic materials (including animal waste) on agricultural lands. Management plans for land application of organic materials on farmlands may be developed for eligible farm operations. Assistance for these programs is provided at the local level through conservation districts. Conservation publications that provide information on managing animal waste and fertilizers are available (NJDA, 2000).

9.0 Additional State-Specific Information

Cooperative Extension Service

Although Rutgers Cooperative Extension offers programs on agricultural practices and maintaining an efficient balance between agriculture and the environment, its programs do not address CAFOs. Information about the extension can be found at www.rce.rutgers.edu/.

Comprehensive Nutrient Management Plan (CNMP) Certification

New Jersey does not have a CNMP preparers certification program.

Additional Information

New Jersey has not expended any significant time on the CAFO program (USEPA 1998).

10.0 References

NASDA. 1997. *State Survey on Waste and Manure Management Regulation*. National Association of State Departments of Agriculture

- NJDA. 2000. *Natural Resource Conservation*. New Jersey Department of Agriculture <www.state.nj.us/agriculture/rural/natsrc.htm>. Accessed October 2000.
- USDA. 1999. *1997 Census of Agriculture: Geographic Area Series*. U.S. Department of Agricultural Statistics Service, Washington, DC.
- USDA. 2000. Specific queries conducted on the 1997 Census of Agriculture published data. U.S. Department of Agriculture.
- USEPA. 1998. *Efforts to Improve Controls on Concentrated Animal Feeding Operations (CAFOs)*. Results of June 1998 Survey of States and Regions compiled by G. Beatty. U.S. Environmental Protection Agency, Office of Water, Washington, DC.

New Mexico's CAFO Program

1.0 Background

Based upon information provided to EPA by USDA it is estimated that there are 81 AFOs with from 300 to 1,000 animal units and 109 AFOs with more than 1,000 animal units in New Mexico. These are primarily in the dairy livestock sector (USDA, 1999; USDA, 2000).

Because New Mexico is not authorized to issue NPDES permits, Region 6 of the U.S. Environmental Protection Agency is responsible for implementing the NPDES program. Region 6 issued a CAFO general permit in 1993 and re-proposed issuance of a CAFO general permit on June 26, 1998 (Region 6 concurrently proposed a distinct general permit for CAFOs located in impaired watersheds).

2.0 Lead Regulatory Agency

The New Mexico Environment Department (NMED) is the lead regulatory agency regarding CAFOs. Information about NMED can be found at www.nmenv.state.nm.us/. NMED's Surface Water Quality Bureau (SWQB) coordinates CAFO programs with other programs (USEPA, 1998).

3.0 State Regulations Regarding AFOs/CAFOs

Regulations regarding animal feedlots in New Mexico include the following:

- New Mexico Water Quality Act 74-6-1NMSA.
- Liquid Waste Disposal 20NMAC7.3.
- Ground and Surface Water Protection 20NMAC6.2.

4.0 Type of Permits

NPDES

Because New Mexico is not an NPDES authorized State, Region 6 of the U.S. Environmental Protection Agency issues NPDES permits to CAFOs in New Mexico.

Other

The state issues a ground water discharge permit under the authority of the New Mexico Water Quality Act and the New Mexico Water Quality Control Commission (WQCC) Regulations (NMED, 1999).

5.0 Permit Coverage

An NPDES permit may be issued to a facility meeting the federal definition of CAFO. In addition, a New Mexico ground water discharge permit may be required for any AFO or CAFO where there is discharge or activity that causes or could cause effluent or leachate to move into ground water directly or indirectly. Examples of potentially regulated discharges from AFOs include dairy wastewater discharges to lagoons and land application areas (NMED, 1997). Ground water discharge permits address operational aspects of the facility as well as monitoring,

nutrient management record-keeping, contingency planning, and closure. The New Mexico Water Quality Act prohibits the issuance of a ground water discharge permit if the discharge will cause or contribute to a violation of a surface water quality standard.

6.0 Permit Conditions

Approvals

A site appraisal is required before facility development (NASDA, 1997).

Lagoon Design and Specifications

No information was found in publically available sources.

Discharge Rules

Under the state ground water discharge permit provisions, no person may cause or allow effluent or leachate to discharge so that it might move directly or indirectly into ground water unless he is discharging pursuant to a discharge plan approved by the secretary. When a discharge plan has been approved, discharges must be consistent with the terms and conditions of the plan. Note that the requirement for a plan does not apply when the effluent meets specified pollutant standards (i.e., when the effluent meets all the listed numerical standards of Section 3103, has a total nitrogen concentration of 10 mg/L or less, and does not contain any toxic pollutants).

Waste Management Plans

New Mexico's ground water discharge permit requires contingency plans to address potential failures of waste management systems.

The Region 6 general NPDES permit requires the development and implementation of a Pollution Prevention Plan (NMED, 1999).

Separation Distances

There are no state standards for distance from dwellings or property lines. A 200-foot minimum distance from public water wells is required for land application (NASDA, 1997). A 100-foot minimum requirement applies for private wells.

Land Application Requirements

Land application requirements are based on nitrogen loading (NASDA, 1997).

Other Requirements

Ground water discharge permits include monitoring requirements such as sampling of ground water and effluent, flow measurements, and nutrient record-keeping (NMED, 1999).

According to the state's solid waste plan (20 NMAC, Chapter 9, Part 4), agricultural waste is solid waste of plant or animal origin and comes from the production and management of livestock, crops, vegetation, and soil. Production and management include the activities of

feeding, housing, and maintaining livestock such as cattle, sheep, and poultry. Agricultural waste includes manures, orchard and vineyard prunings, and crop residues that are removed from the site of generation. Agricultural waste is not regulated under New Mexico's Solid Waste Management Regulations.

7.0 Enforcement Information

Although New Mexico does not administer or enforce the NPDES program, NMED and SWQB act as representatives of USEPA to perform some NPDES inspections. SWQB staff document their findings and may discuss preliminary findings with the operators; however, inspection reports are sent to EPA for a determination of compliance (NMED, 1999).

Facilities in watersheds impaired by nutrients are targeted for inspection, and about 20 percent of all facilities are inspected annually (USEPA, 1998).

8.0 Voluntary Programs

The New Mexico Environment Department and the New Mexico State University Cooperative Extension Service provide education and training.

9.0 Additional State-Specific Information

Cooperative Extension Service

New Mexico State University Cooperative Extension Service is a cooperative effort between NMSU's College of Agriculture and Home Economics and New Mexico's 33 counties. It provides educational and informational outreach to all communities in the state. Information about the Service can be found at www.cahe.nmsu.edu/ces/.

Comprehensive Nutrient Management Plan (CNMP) Certification

New Mexico does not have a CNMP preparer certification program.

10.0 References

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New York's CAFO Program

1.0 Background

Until 1995, permits were not issued to Concentrated Animal Feeding Operations (CAFOs) in New York because they were considered no discharge operations and not subject to the federal regulations regarding CAFOs. Therefore, agriculture was not defined as a point source until 1995. Since 1995, the number of large CAFOs with over 1,000 animal units operating in New York has nearly doubled (NYDEC, 1999). Based on a survey completed in 1998 for a draft general permit public participation process, New York estimated that there were approximately 151 livestock operations with over 1,000 animal units and 827 with 300–1000 animal units.

As of October, 2000 there were 577 CAFOs permitted under General SPDES Permit GP-99-01. Of the 577 total, there are 137 *large* CAFOs with more than 1,000 animal units and 440 *medium* CAFOs with between 300 and 1,000 animal units.

New York has developed a general State Pollutant Discharge Elimination System (SPDES) permit program that includes protection to groundwaters from point source discharges (NYDEC, 1999). The State has issued a 5-year general SPDES Permit for CAFOs effective July 1, 1999 and expiring June 30, 2004 (NYDEC, 1999).

On July 12, 1999, Governor George Pataki announced that he had signed into law legislation qualifying large livestock operations for funding, under the Agricultural Non Point Source Pollution Control and Abatement Program. This program specifically helps to protect water quality by the implementation of best management practices on agricultural operations. According to the Governor, the legislation would help ensure clean water in New York, by helping farmers who would otherwise be ineligible for funding (NY Office of the Governor, 1999).

2.0 Lead Regulatory Agency

New York Department of Environmental Conservation (NYDEC) is the lead regulatory agency regarding CAFOs in New York. NYSDEC information can be found at www.dec.state.ny.us/.

3.0 State Regulations Regarding AFOs/CAFOs

Within the State Environmental Conservation Law (ECL) is the State Pollutant Discharge Elimination System, SPDES, (Chapter 10, Article 3). SPDES stipulates that no person shall discharge or cause a discharge of any pollutant without a SPDES permit having been issued to them. The regulation controls point source discharges to surface and ground waters. SPDES specifically describes prohibited discharges, how to apply for a permit, public notice requirements, provisions of SPDES permits, reissuance of permits, and monitoring of discharges. The specific language of this regulation can be found at www.dec.state.ny.us/website/regs/ch10.htm.

New York also has a SPDES permit specifically for CAFOs called the General State Pollutant Discharge Elimination System (SPDES) Permit for Concentrated Animal Feeding Operations (CAFOs). This permit, also known as CAFO General Permit GP-99-01, is a single permit which covers all state CAFOs who apply for coverage. Facility-specific requirements are detailed in the required Agricultural Waste Management Plan. (NYDEC, 1999). Specific language from this

regulation can be found at www.dec.state.ny.us/website/dow/package.pdf.

4.0 Types of Permits

NPDES

New York is authorized to administer the federal NPDES Program. The General State Pollutant Discharge Elimination System (SPDES) Permit for Concentrated Animal Feeding Operations (CAFOs) became effective July 1, 1999. The discharge permit is issued under DEC's State Pollution Elimination Discharge Permit Program, pursuant to the Environmental Conservation Law and the Clean Water Act (NYDEC, 1999).

5.0 Permit Coverage

The general permit covers facilities with 1,000 animal units or more and operations with between 300 and 999 animal units that discharge into navigable waters through a man-made conveyance or directly to surface water. All CAFOs that apply for coverage will be covered by the general permit. Additionally, any AFO that meets the definition of a CAFO is eligible for coverage under the same general permit. Facilities with less than 300 animal units are not eligible for coverage under GP-99-01 (NYDEC, 1999).

NYDEC has prepared a fact sheet for determining whether an AFO with 300 to 999 animal units is a CAFO. This fact sheet takes the user through a three-step process, where they first determine whether their facility is an animal feeding operation (AFO). If the facility is an AFO, the user proceeds to step 2, where they determine the number of animal units in the AFO. If the facility has more than 1,000 animal units, it is a CAFO. If the facility has less than 300 animal units, it is not a CAFO. Those users with less than 300 animal units are referred to the Guide to Agricultural Environmental Management in New York State. This guide can be obtained by contacting the New York State Department of Agriculture and Markets at 1-800-554-4501, asking for Soil & Water Division, and requesting a copy of the guide. Those users with 300 to 999 animal units proceed to step three, where they determine if their AFO "discharges into navigable waters either through a man-made ditch, flushing system, or other similar man-made device, or directly into surface waters of the State" (NYDEC, 1999). For more specific information about making this determination or about the first two steps, the fact sheet (CAFO Fact Sheet No. 3) is available at www.dec.state.ny.us/website/dow/package.pdf.

The following CAFOs are not covered by the general permit:

- CAFOs that the Department has determined, prior to the date of coverage, to be contributing to a violation of a water quality standard.
- CAFOs which have been notified by the Department to file for an individual SPDES permit.
- CAFOs that discharge all of their process wastewater to a publicly owned sanitary sewer system which discharges in accordance with an SPDES permit (NYDEC, 1999).

6.0 Permit Conditions

GP-99-01 does not dictate the specific technical requirements an animal feeding operation must meet. Rather, the technical specifications for waste handling operations will be developed by the

operators and detailed in an Agricultural Waste Management Plan. The plan must be certified as adhering to NRCS standards before receiving approval (NYDEC, 1999).

Approvals

The Agricultural Waste Management Plan (AWMP) must be developed by a planner certified to prepare Comprehensive Nutrient Management Plans. The CAFO operator must submit a certification form to NYSDEC that is signed by both the CAFO operator and the certified planner that developed the AWMP that has been developed in accordance with "NRCS Conservation Practice Standard 312-NY" within the compliance deadlines specified in the General Permit. (The CAFO operator is notified of the AWMP compliance date in writing by NYSDEC at the time of permit coverage.)

Lagoon Design and Specification

Lagoon design and specification information can be obtained from NRCS Conservation Practice Standard (CPS) 313-NY for Waste Storage Facilities and NRCS CPS 359 for Waste Treatment Lagoons.

Discharge Rules

In accordance with existing NPDES CAFO regulations, New York's general permit for CAFOs is a "zero-discharge" permit that allows no discharge to any natural surface water from the area of confinement, unless a 25-year, 24-hour storm event occurs. Operations must retain the 25-year, 24-hour storm runoff, but discharge during larger events is allowed (NYDEC, 1999).

Waste Management Plans

New York CRR, Title 6, Chapter 10, Article 3, requires that Agricultural Waste Management Plans (AWMP) for each CAFO facility covered by the New York State Pollutant Discharge Elimination System (SPDES) general permit for CAFOs be developed. The AWMP must be developed or reviewed by a qualified Agricultural Environmental Management (AEM) Planner. The permittee and the AEM Planner must certify that the AWMP was prepared in accordance with the "NRCS Conservation Practice Standard No. 312- NY." The permittee must amend the AWMP prior to any changes that would affect the potential for discharge. The permittee and an AEM Planner must certify every 5 years (after the date of the initial AWMP) that the AWMP is in accordance with "NRCS Conservation Practice Standard No. 312 - NY" (NYDEC, 1999). The General Permit states that (NYDEC 2000a):

- Large existing or expanded facilities (1,000 animal units or more) shall develop and retain on-site a AWMP prepared by a qualified AEM planner within 18 months of the coverage under the SPDES permit
- Medium existing or expanded facilities (more than 300 and fewer than 1,000) shall develop and retain on-site a AWMP prepared by a qualified AEM planner within 24 months
- New facilities shall retain on-site and implement a certified AWMP upon the date of coverage under SPDES permit

A list of certified planners provided by NYDEC can be found along with the General Permit, at

www.dec.state.ny.us/website/dow/package.pdf.

Separation Distances

New and expanded wastewater retention facilities must not be located in a 100-year flood plain unless the facility is protected from inundation and damage that may occur during the flood event (NYDEC, 1999).

Land Application Requirements

These requirements are specified in the AWMP prepared by each permitted facility (NYDEC, 1999).

Other

New facilities may not be built in State waters including wetlands (NYDEC, 1999).

7.0 Enforcement Information

General Enforcement Information

NYSDEC is developing Compliance Assurance Strategy for CAFOs that will be integrated with the current program guidance on compliance and enforcement.

General Inspection Information

The permittee shall allow the Commissioner of the Department, the EPA Regional Administrator, or any duly authorized agent to enter the permittee's facility, to have access to any applicable records, to inspect any facilities, equipment, practices, or operations regulated under the permit, and to sample or monitor substances or parameters at any location (NYDEC, 1999).

Under State Law ECL Article 17, Title 8, anyone who violates a permit condition is subject to a civil penalty not to exceed \$25,000 per day for each violation (NYDEC, 1999).

An inspection schedule will be developed once the general permit is approved.

8.0 Voluntary Programs

The New York State Department of Agriculture and Markets (www.agmkt.state.ny.us/) is the lead agency for voluntary programs. The agency has instituted a program to train and qualify Agricultural Environmental Management Planners. This is one element of the AEM program which is an innovative process of tiered evaluation of environmental risks and development and implementation of best management practices to minimize or eliminate those risks.

The New York State Soil and Water Conservation Committee seeks to "develop and oversee implementation of an effective agricultural nonpoint source water quality program for the state. In cooperation with the Department of Agriculture and Markets, the Committee helps administer the AEM program and to develop the New York "Guide to Agricultural Environmental Management in New York State." More information about the committee, its programs, and its

responsibilities can be found www.agmkt.state.ny.us/soilwater/home.html.

9.0 Additional State-Specific Information

Cooperative Extension Service

New York has a cooperative extension service at Cornell University, which helps build partnerships and coalitions with individuals, communities, organizations, government agencies, and businesses. More information about the Cornell University Cooperative Extension can be found at www.cce.cornell.edu/.

Comprehensive Nutrient Management Plan (CNMP) Certification

New York Department of Environmental Conservation, in partnership with NRCS, New York State Soil & Water Conservation District and Commission, Cornell Cooperative Extension, New York Department of Agriculture and Markets, Certified Crop Advisors, agricultural consultants, and farmers developed the Agricultural Environmental Management Planner Certification Program. This program is used to qualify Agricultural Environmental Management Planners (AWMPs). The New York Department of Agriculture and Markets along with the USDA NRCS is responsible for implementation of the certification program (NYDEC, 2000a).

Agricultural Environmental Management Planner is a planner deemed qualified by the Commissioner of Agriculture and Markets, in consultation with the State Soil and Water Conservation Committee to develop and review AWMPs for concentrated animal feed operations (CAFOs) in New York State. To be certified as an Agricultural Environmental Planner, an individual must complete 5 hours of home study and take a 4 day training course. After completion of the home study and training course, the first 3 AWMPs will be reviewed for adequacy. The USDA-NRCS will issue planner certificates. Continuing education programs are being developed (NYDEC, 2000a).

Five years after the date of the initial AWMP Certification, the permittee and a qualified AEM Planner shall re-certify in accordance with the Agricultural Waste Management Plan Five Year Re-Certification requirement. The re-certification states that the AWMP has been prepared in accordance with NRCS Conservation Practice Standard No. 312 - NY (NYDEC, 2000a).

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North Carolina's CAFO Program

1.0 Background

In 1996 North Carolina hog farmers produced an estimated 3.5 billion pounds of live hogs valued at \$1.8 billion, making North Carolina second in the nation in hog production. Between 1993 and 1996, hog production in North Carolina increased by 69 percent (Zerring, 1997). Based upon information provided to EPA by USDA it is estimated that there are 1,667 AFOs with from 300 to 1,000 animal units and 1,194 AFOs with more than 1,000 animal units in North Carolina. These are primarily in the broiler and swine sectors (USDA, 1999; USDA, 2000).

This explosive growth of the animal farming industry, particularly hog farming, has led the North Carolina General Assembly to reexamine the effect of intensive animal feeding operations on the state. As such, the Clean Water Responsibility and Environmentally Sound Policy Act (House Bill 515) established a moratorium on the construction or expansion of swine farms within North Carolina for 2 years so that policy makers could determine how to manage intensive feeding operations. The discussion below includes permitting requirements before the moratorium was enacted and permitting requirements resulting from the passage of House Bill 515.

In an effort to reduce public health and environmental impacts from swine facilities, the Hunt administration proposed an anaerobic swine lagoon conversion plan in April 1999. This plan calls for converting swine lagoons and sprayfields to more effective treatment systems. Three major components are included in the plan: close and clean up inactive lagoons; establish performance standards for new facilities; and convert active facilities to new technologies. In addition to the conversion plan, Governor Hunt also urged lawmakers to extend the current moratorium until July 2001 (NCDENR, n.d.b). Unfortunately, the conversion plan has produced few results to date. For more information about the framework of the conversion plan, refer to www.enr.state.nc.us/files/hogs/hogplan.htm.

2.0 Lead Regulatory Agency

The North Carolina Division of Water Quality (DWQ), which is housed within the Department of Environment and Natural Resources (DENR), administers the permitting program and operates a mandatory training and certification program for animal waste management system operators (Linville, 1997). More information about DWQ and DENR can be found at <http://h2o.enr.state.nc.us/index.html> and <http://www.enr.state.nc.us/>.

3.0 State Regulations Regarding AFOs/CAFOs

The Clean Water Responsibility and Environmentally Sound Policy Act (House Bill 515) established a moratorium on construction or expansion of swine farms within North Carolina for 2 years. Between March 1, 1997 and March 1, 1999 permits could not be issued to new or expanding swine facilities. This act removed swine farms from being exempt from county zoning ordinances and counties could adopt zoning regulations governing swine farms with waste management systems with a 600,000-pound capacity. The moratorium was adopted to allow counties time both to adopt zoning ordinances that can address intensive feeding operations and to complete and review agricultural studies previously authorized by the General Assembly.

Effective March 1, 1999, animal waste management systems cannot be issued a general permit

and must be issued an individual permit if they are in a county (1) that has a population of less than 75,000, (2) that has more than \$150 million of expenditures for travel and tourism, and, (3) that is not in the coastal area.

North Carolina Administrative Code Section 15A NCAC 2H.0200 – Waste Not Discharged to Surface Waters – defines the permitting rules for animal waste management systems. Specific text from this code can be found at http://mapsweb01.sips.state.nc.us/ncoah/ncadministrativ_/title15aenviron_/chapter02enviro_/default.htm.

4.0 Types of Permits

NPDES

Although North Carolina is authorized to issue NPDES permits, it has opted not to issue NPDES permits to CAFOs. Rather, North Carolina has developed its own water quality permitting program (Whittle, 1996).

Other

The North Carolina Division of Environmental Health and Natural Resources (DEHNR) established a general nondischarge permit for swine waste operations and other livestock facilities. Although a general permit has been established, individual permits may still be required if the state determines that a facility poses a significant risk or threat to the environment. All intensive animal feeding operations that meet the threshold described below are subject to North Carolina's nondischarge permitting rules.

5.0 Permit Coverage

In North Carolina, permit coverage is much more stringent than the federal standards that cover intensive feeding operations. Since 1993 intensive animal feeding operations with animal waste management systems designed to serve more than the following animal populations have been required to obtain a permit: 100 head of cattle, 75 horses, 250 swine, 1,000 sheep, or 30,000 birds with a liquid waste system. Operations with less than the above thresholds are automatically deemed permitted and are not required to obtain an approved waste management plan (Whittle, 1996). Construction or operation of an animal waste management system without a permit is prohibited in North Carolina.

Swine operations are covered under the Swine Waste Operation General Permit (issued January 14, 1997, and effective until December 31, 2001) if no wastes are discharged to surface waters (except for unintentional discharges from a 25-year, 24-hour storm event) and a Certified Animal Waste Management Plan (CAWMP) is submitted to the Division of Water Quality.

6.0 Permit Conditions

Approvals

New or expanding farms must undergo a site appraisal before beginning development projects (NASDA 1997) and develop a Certified Animal Waste Management Plan (CAWMP) before stocking animals (NCDENR Swine Waste General Permit).

A Certificate of Coverage (COC), issued under the Swine Waste Operation General Permit, authorizes swine facilities to operate under the conditions set forth in the CAWMP.

Lagoon Design and Specifications

New waste storage structures must have a 180-day capacity, have 1 to 2 feet of freeboard, and be constructed so that they will not be inundated by a 100-year flood.

Seepage is restricted to 1/28 inch per day (NASDA, 1997).

Discharge Rules

No wastes can be discharged to surface waters except the unintentional releases resulting from a 25-year, 24-hour storm event.

Waste Management Plans

North Carolina adopted the Natural Resources Conservation Service's (NRCS) technical guidelines, and all intensive feeding operations subject to state law must comply with these guidelines in developing their animal waste plans.

A Certified Animal Waste Management Plan (CAWMP) is required for all swine facilities issued a Certificate of Coverage under the Swine Waste Operation General Permit and must include the following components (Article 21 Chapter 143 of the General Statute §143-215.10C):

- A list of potential odor sources and a choice of site-specific best management practices to minimize those sources.
- A list of potential insect sources and a choice of site-specific best management practices to minimize those sources.
- Provisions for acceptable methods of disposing of dead animals.
- Provisions for best management practices for riparian buffers, particularly along perennial streams.
- Provisions for testing waste products used as nutrient sources as close to the time of land application as practical (at least within 60 days), and at least annual inspections of soils where waste will be applied.
- Provisions regarding waste utilization plans that ensure a balance between nitrogen application rates and nitrogen crop requirements.
- Provision for completing and maintaining records as required by the state.

Specific text from the General Statute Section 143-215.10C can be found at www.ncga.state.nc.us/statutes/statutes%5Fin%5Fhtml/chp1430.html.

Separation Distances

Intensive swine feeding operations must typically be 1,500 feet from any occupied residence; 2,500 feet from schools, churches, and hospitals; and 500 feet from property lines. When spraying fields with animal waste, a minimum separation distance of 75 feet is required from property lines and 500 feet from water wells (NASDA 1997). A swine house or lagoon can be below the separation distance requirements if written approval from the neighboring property owners is recorded with the state. If a permit is required, swine farm operators must inform all adjoining neighbors before construction of or modifications to swine farms begin.

Land Application Requirements

Land application sites do not require a separate permit if waste is applied at agronomic rates and a vegetative buffer of at least 25 feet is maintained from perennial waters.

Operator Training Requirements

Since 1995, every waste management facility must have a trained and certified operator of animal waste management systems.

7.0 Enforcement Information

General Enforcement Information

Any facility that directly discharges waste from a lagoon (through a pipe or overflow) or fails to control storm water runoff from a storm event less intense than the 25-year, 24-hour storm is in violation of regulation 15A NCAC 2H.0122-.0123. Although grace periods allow operators time to control discharges and avoid penalties, particularly for first time offenders, fines can be assessed immediately for willful discharges or violations of water quality standards (NCDEM, 1993).

Civil and/or criminal penalties of up to \$10,000 per day and/or imprisonment can be assessed for violations of water quality standards and illegal discharges. Fines for first violations of willful discharges do not exceed \$5,0000 unless water quality standards are violated (NCDEM, 1993).

General Inspection Information

New and expanded facilities require an on-site inspection to confirm that animal waste treatment systems have been constructed to meet the appropriate standards (North Carolina Administrative Code Section: 15A NCAC 2H.0200). Also, the North Carolina Department of Environmental Management (NCDEM) inspects animal waste facilities in response to citizen complaints or obvious water quality problems (Agena 1994; NCDEM 1993). Two regular inspections are conducted each year. One is a compliance inspection performed by the Division of Water Quality and the other is a technical assistance inspection performed by the Division of Soil and Water Conservation (USEPA, 1998; I. Linville, 1997; Thompson 1997).

8.0 Voluntary Programs

The Department of Environmental Health and Natural Resources, Division of Soil and Water Conservation is the lead agency for voluntary programs in North Carolina. Administered by the

North Carolina Division of Soil and Water Conservation, North Carolina's Agriculture Cost Share Program for Nonpoint Source Pollution Control was established in 1989 as a statewide program to protect water quality. The program pays a farmer up to 75 percent of the average cost of implementing approved BMPs and provides technical assistance to landowners. Local Soil and Water Conservation District Boards identify treatment areas, allocate resources, sign contractual agreements, and provide technical assistance. Participation by the local Soil and Water Conservation Districts is considered crucial to the success of the program.

9.0 Additional-State Specific Information

Cooperative Extension Service

The North Carolina State University Cooperative Extension (www.ces.ncsu.edu/) has a number of programs and departments to educate the public, including the Animal Science Department, which specifically addresses waste management for dairy and swine operations.

Comprehensive Nutrient Management Plan (CNMP) Certification

North Carolina does not have a CNMP preparer certification program. Animal Waste Management Systems Plans must be certified by a technical specialist pursuant to the rules regulated by the Soil and Water Conservation Commission, which administers the regulation and designates technical specialists. A technical specialist is only allowed to certify BMPs (which make up each animal waste management plan) within their area of expertise. The designation categories are the following (CES, 2000):

- Collection, storage, and/or treatment
- Waste utilization plan
- Waste utilization plan/wettable acres
- Runoff controls
- Irrigation equipment
- Irrigation equipment/wettable acres

The North Carolina Administrative Code Title 15, Chapter 2H, Section 200 requires a certified operator for animal waste management systems that confine more than 250 swine, 100 confined cattle, 75 horses, 1,000 sheep, or 30,000 poultry with a liquid animal waste management system (North Carolina State University of Soil Science Extension, 2000). The Water Pollution Control System Operators Certification Commission developed a program to certify operators. The Commission has eleven members: 2 are from the agriculture industry and are appointed by the Commissioner of Agriculture, and the remaining 9 are appointed by the Secretary of Environment, Health, and Natural Resources. The Commission is administered under DENR (North Carolina State University of Soil Science Extension, 2000).

There are separate operator training and certification programs for type A and type B animal waste management systems. Type A systems rely on anaerobic lagoon and soil/plant systems for treatment of low fiber animal waste from swine or poultry operations. Type B systems rely on soil/plant systems for the treatment of high fiber animal waste from cattle, horses, and sheep (North Carolina State University of Soil Science Extension, 2000).

The Water Pollution Control Systems Operator Certification Program requires training in the appropriate type of waste management system (Type A or Type B) and the passing of an

examination. To maintain certification, an operator must pay an annual renewal fee and complete 6 hours of continuing education every 3 years (North Carolina State University of Soil Science Extension, 2000).

Other Information

A Violation Points System applicable to permits for animal waste management systems for swine farms is being developed in North Carolina. Violations that cause the greatest harm will receive the most points and the number of points added to an operator's permit will be directly related to negligence or willfulness. The number of points that will result in revocation of a permit has not yet been decided.

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North Dakota's CAFO Program

1.0 Background

Based on information provided to EPA by the U.S. Department of Agriculture (USDA), it is estimated that there are 130 AFOs with 300 to 1,000 animal units and 30 AFOs with more than 1,000 animal units in North Dakota. These are primarily in the turkey sector (USDA, 1999; USDA, 2000).

Since 1972 North Dakota's CAFO program has been designed to protect the quality of the state's water resources through oversight of the construction and management of concentrated animal feeding operations. The program regulates animal feeding operations that maintain at least 200 animal units, and it can require design or operational modifications to protect the quality of the waters of the state. Regulatory authority is provided in North Dakota Century Code (NDCC) 61-28 and North Dakota Administrative Code (NDAC) 33-16, which can require specific actions for construction, water quality monitoring, animal disposal, contingency planning, and animal waste disposal (NDDOH, 1998-1999).

A database of CAFO information is maintained in North Dakota. The database provides information on the location, number, size, type, and contact information for each regulated CAFO in the state. The database is updated as needed to reflect changes in the program, such as the approval of new operations or modifications to existing operations (NDDOH, 1998-1999).

2.0 Lead Regulatory Agency

North Dakota Department of Health, Division of Water Quality, is the lead regulatory agency regarding CAFOs. Information about the Department can be found at www.health.state.nd.us/ndhd/envIRON/wq/index.htm.

3.0 State Regulations Regarding AFOs/CAFOs

Water Quality Standards have been developed and adopted for the surface waters of North Dakota, as provided by the Water Quality Act of 1965. The 1967 state legislature adopted an extensive Water Pollution Control Act, addressing issues such as the control of livestock waste. The *Rules and Regulations for the Control of Pollution from Certain Livestock Enterprises* were first issued in 1972 by the State Health Department and updated in 1989 (NDDOH, 2000).

State law provides that odor regulations do not apply to the spreading of manure done in accordance with a nutrient management plan approved by the state Department of Health or rules adopted by the Department (Ch. 23-25-11).

4.0 Type of Permits

NPDES

North Dakota is an NPDES-authorized state.

Other

Construction approval is required for new operations (USEPA, 1998).

5.0 Permit Coverage

NDAC 33-16-03-04 defines a feedlot or concentrated feeding operation as any livestock feeding, handling, holding operation, or feed yard where animals are concentrated in an area (NDDOH, 2000):

- Which is not normally used for pasture or growing crops and where animal waste can accumulate, and
- Where the space per animal unit is less than 600 square feet. (Six hundred square feet is an area 30 by 20 feet.) Normal cattle wintering operations are not included, except when these particular operations cause or are likely to cause pollution.

Approval from the State Department of Health is needed for the following operations (NDDOH, 2000):

- All concentrated feeding operations where the number of animals being fed, handled or held at any one time is greater than or equal to 200 animal units.
- All concentrated feeding operations that are located on a floodplain and that have 100 animal units or more.
- Any concentrated feeding operation where the distance to any surface waters is less than 2 feet per animal unit. These surface waters include all waters except those which are completely contained on an operator's property and which do not join with natural surface or underground waters. (For example, if an operation has 100 animal units and they are fed within 200 feet of any surface water not completely contained on the operator's property, the operator must have approval from the Department.)
- Any concentrated feeding operation, regardless of its location or the number of animal units, if the Department has found it is causing or is likely to cause pollution.

6.0 Permit Conditions

Approvals

Any operator of a CAFO, as describe above, must seek approval for waste handling operations or to discharge from a point source.

Lagoon Design and Specifications

Indoor facilities should be able to store livestock waste for at least 180 days. Open livestock lots must not allow containment ponds to overflow under normal conditions. All waste and runoff should be contained on the property and not allowed to reach natural drainage.

Discharge Rules

North Dakota state law prohibits feeding livestock on ice and feeding livestock or handling livestock waste in any way that would allow the waste to enter waters of the state, or to be washed into those waters by runoff from rain or snowmelt (NDDOH, 2000).

Waste Management Plans

A nutrient management plan is required for all CAFOs that have been issued state permits to operate. The nutrient management plan covers the following (North Dakota Nonpoint Source Pollution Task Force, 1998-1999):

- The handling of the manure from the time it is removed from the storage area until it is used for crop production.
- How much manure (i.e., nutrients) will be available for crops to use.
- How the manure will be applied to cropland, and at what rate the manure will be applied.
- The type of crop grown, the nutrient content of the soil, and any commercial fertilizer added to the field.

Separation Distances

The operator of a new animal feeding operation that has more than 1,000 animal units may not locate or establish the operation within a delineated source water protection area for a public water system. The source water protection areas for water supply wells include the entire wellhead protection area. For the surface-water intakes of public water systems, source water protection areas include all or portions of the surface water that supplies the water for the public water system, including all or portions of the surface water's shoreline.(NDDOH, 2000b):

Two optional provisions are optional are included (NDDOH, 2000b):

- Within 1,200 feet (365.6 meters) of a private ground water well that is not owned by the operator or within 1,500 feet (457.1 meters) of a public ground water well that does not have a delineated source water protection area.
- Within 1,000 feet (304.7 meters) of surface water that is not included in a source water protection area.

Odor setbacks are stated in the following table.

Setback Distances for Animal Feeding Operations		
Number of Animal Units	Hog Operations	Other Animal Operations
fewer than 300	none	none
300 - 1000	0.50 mi (0.805 km)	0.50 mi (0.805 km)
1001 or more	0.75 mi (1.207 km)	0.50 mi (0.805 km)
2001 or more	1.00 mi (1.609 km)	0.75 mi (1.207 km)
5001 or more	1.50 mi (2.414 km)	1.00 mi (1.609 km)

Land Application Requirements

The state recommends application of livestock waste to cropland where nutrients can be utilized.

7.0 Enforcement Information

General Enforcement Information

The Department of Health has issued permits to approximately 440 animal feeding operations. (The Department currently requires any livestock feeding operation with more than 200 animals units to obtain a permit, and it anticipates a rule change adjusting this threshold to 300 animal units so as to be consistent with federal regulations.) Currently, there are (NDDOH, 2000b)

- About 80 operations with 300 or more animal units
- Nearly 60 operations with more than 500 animal units
- Nearly 30 operations with more than 1,000 animal units

Based on a recent survey, other livestock feeding operations may not have permits because the operators are unaware of the rule permit requirements. The total number of animal feeding operations in North Dakota is unknown (NDDOH, 2000b).

General Inspection Information

Onsite inspection may be required before issuing permits. Also, North Dakota conducts annual inspections of CAFOs (1,000 animal units or more) and other facilities on a complaint basis (USEPA, 1998).

8.0 Voluntary Programs

The Farmstead Assessment Program is a voluntary educational program designed to assist farmers and ranchers in other rural residences with assessing the risk of ground water contamination at their farmsteads. A checklist guides participants through the assessment process. The questions in the checklist identify potential sources of ground water contamination. Supplemental publications provide background information to help reduce the contamination risks (North Dakota State University Extension Service, 2000).

In January 1997 the U.S. Environmental Protection Agency (USEPA) approved \$357,500 for a Livestock Waste Technical Information and Assistance program using Clean Water Act section 319 grant money. This funding allowed the North Dakota State University Extension Service to develop a statewide information and education program to inform livestock producers about implementing manure management practices. Information and education assistance will be provided to ongoing section 319 projects with livestock waste management components, and an engineering extension specialist will be hired to lead the program (North Dakota Nonpoint Source Pollution Task Force, 1997).

As described in the Separation Distances section above, two setback requirements are optional.

9.0 Additional State-Specific Information

Cooperative Extension Service

North Dakota State University Extension Service provides technical assistance and educational materials that help producers operate their systems without adversely affecting the environment. More information about the extension service can be found at www.ext.nodak.edu/.

Comprehensive Nutrient Management Plan (CNMP) Certification

North Dakota does not have a CNMP preparers' certification program.

10.0 References

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Ohio's CAFO Program

1.0 Background

Based upon information provided to EPA by USDA it is estimated that there are 532 AFOs with 300 to 1,000 animal units and 212 AFOs with more than 1,000 animal units in Ohio (USDA, 1999; USDA, 2000).

2.0 Lead Regulatory Agency

The Animal Waste Pollution Abatement Program is administered by the Ohio Environmental Protection Agency (EPA) and the Ohio Department of Natural Resources (DNR), Division of Soil and Water Conservation. Ohio EPA is responsible for permitting livestock operations with 1,000 animal units or more, or operations of any size that directly discharge to waters of the state. The Division of Soil and Water Conservation addresses pollution problems from operations with fewer than 1,000 animal units, which are not required to obtain permits (Hutchinson, 1996).

3.0 State Regulations Regarding AFOs/CAFOs

Ohio Revised Code (OR) 6111 prohibits the controlled discharge of waste directly into state waters and gives Ohio EPA the authority to regulate such discharges (Veenhuizen et al., 2000). Livestock facilities are affected by the ODNR Division of Soil and Water Conservation's Agricultural Pollution Abatement Authority (ORC 1515 & 1511 and OAC 1501:15-5-01 through 18) and Ohio's Stream Litter Act (ORC 1531.29), which specifies that any person putting wastes into Ohio's waters may be guilty of a violation (Hutchinson, 1996).

4.0 Types of Permits

Three types of Ohio EPA approvals may apply to an animal operation in the state: an NPDES permit, an installation permit (formerly a permit-to-install), and a livestock waste management plan. An animal operation may need to have more than one permit or management plan (Hutchinson, 1996).

NPDES

There are potentially two types of NPDES permits that a livestock operator would need: an NPDES wastewater permit and an NPDES storm water permit.

Other

An NPDES wastewater permit issued by the Director of Ohio EPA authorizes a discharge to waters of the state and sets limits on the amount of pollutants allowed to be discharged. This permit is rarely used for animal waste in Ohio.

An NPDES construction storm water permit is necessary if more than 5 acres of land will be cleared, graded, or excavated.

An installation permit (also referred to as a permit-to-install or PTI) can be thought of as a construction permit. It is required for new, modified, renovated, or expanding livestock waste treatment/disposal systems that are designed to serve more than 1,000 animal units or have a

controlled direct discharge to waters of the state. An installation permit also is required for construction of sanitary treatment facilities serving restrooms not associated with a private dwelling, for any size operation. If a facility falls under both categories, a single permit can be issued for the whole project. Plans must be approved by the Director of Ohio EPA before construction begins (Hutchinson, 1996).

5.0 Permit Coverage

The following animal operations/facilities will need NPDES wastewater permits from Ohio EPA. Except for these two situations, an NPDES permit is not automatically required (Hutchinson, 1996):

- If the operation/facility meets all of the following conditions:
 - Animal feeding operation of 1,000 animal units or more
 - Facility is designed and operated to contain the volume of all process wastewater generated at the site and runoff from up to a 25-year, 24-hour storm event
 - There is a potential for a discharge (a discharge does not have to be a controlled, directed flow and could include wash water from a milk parlor, silo drainage, lagoon overflows or manure runoff from a feedlot)
- A livestock operation with a controlled direct discharge to waters of the state, regardless of the number of animal units. A controlled direct discharge is a man-made conveyance, such as a pipe, which carries wastewater

6.0 Permit Conditions

Approvals

Three types of approvals may be obtained in Ohio: the NPDES permit approval, the installation permit approval, and approval of the livestock waste management plan.

The owner of a livestock operation submits an installation permit application to the Ohio EPA for approval. Information needed to process an installation permit application includes the following (Hutchinson, 1996):

- Basis of design/operation
- Scaled, detailed engineering drawings
- Site plan
- Hydrogeologic study, if earthen lagoons are used, to determine site suitability and lagoon design requirements

Lagoon Design and Specifications

The storage capacity for earthen lagoons is 180 days, and the storage capacity for concrete lagoons is 120 days.

Discharge Rules

Discharges from animal feeding operations to surface water can occur only in the event of a 25-year, 24-hour storm event (or worse).

Waste Management Plans

A livestock waste management plan specifies how, when, and where animal waste will be handled. It is used for systems that store, stabilize, transport, or apply animal waste to land. A livestock waste management plan is used by Ohio EPA for controlling land-applied wastes in two situations: if animal operations or facilities have a controlled direct discharge to waters of the state or if an animal operation has 1,000 or more animal units. This plan also may be part of an installation permit if a permit is needed for new or expanded animal waste treatment, storage, or disposal facilities. Ohio EPA and local Soil and Water Conservation District (SWCD) office personnel can assist in completing the plan. The plan describes (Hutchinson, 1996):

- Systems to store, treat and transport manure
- Characteristics of the manure and/or wastewater
- Amount and topography of land available for application
- Methods and times of land application
- Crop rotations
- Condition and nutrient status of the soil

The livestock waste management plan provides a documented method of operation that will prevent land-applied waste from adversely affecting water quality. Information needed to process a waste management plan includes:

- Discussion of waste collection, treatment, and disposal
- Volume of waste produced (manure analysis results) and application rate calculations
- Site maps and soil descriptions (for land application), isolation distances
- Discussion of land application management
- Sample sales contract (if applicable)
- Manure and soil sampling schedule
- Recordkeeping and reporting requirements

Owners and operators of CAFOs who are operating in substantial compliance with an approved operation and management plan may use this as an affirmative defense in a private civil action for nuisances involving animal pollution (ORC 1511.021).

Separation Distances

Storage tanks must be at least 100 feet from wells, cisterns, and springs. Lagoons, feedlots, and stacked manure must be at least 200 feet away from wells, cisterns, and springs. Application of liquid manure has to be at least 200 feet from wells and occupied buildings, while manure solids must be applied at least 200 feet from wells and occupied buildings and 25 feet from ponds or streams (Jones and Sutton, 1996).

Land Application Requirements

Nitrogen application is based on crop needs for facilities with 1,000 animal units or more. Facilities with less than 1,000 animal units apply manure based on the phosphorus needs of the crops. It is recommended that liquid manure be applied on slopes of 6 percent or less. A slope of 12 percent or less is recommended for solid manure application. If a slope is 20 percent or more, manure must be incorporated into soil. Timing of manure application is based on weather and soil conditions (Jones and Sutton, 1996).

Other Requirements

Owners and operators of AFOs who wish to compost dead animals must obtain a certificate that shows that they have completed an educational course on composting. In addition, they must use a composting method that is in compliance with ORC 1511.02(E)(10) or an approved composting plan (ORC 1511.022).

7.0 Enforcement Information

The Chief of the Division of Soil and Water Conservation has the authority to enforce state standards for animal pollution abatement.

Anyone found discharging pollutants without valid permits may be liable for civil and/or criminal penalties.

Violators of animal pollution abatement standards are given the opportunity to resolve problems informally by responding to a formal warning letter from the appropriate OEPA district office before the case is referred to the Ohio Attorney General's Office for prosecution. Facilities that violate NPDES permit requirements may face civil penalties of up to \$10,000 for each day of the violation (Ohio Revised Code 6111.07) and criminal penalties of up to \$25,000 and/or one year in prison (Ohio Revised Code 6111.99). In the interest of protecting wildlife, DNR Division of Wildlife may also charge individuals and companies that pollute state waters with violations of the Stream Litter Act. Violations are heard in criminal court, where a judge can levy fines up to \$500 and give 60-day jail sentences to an individual, or give fines up to \$3,000 to \$5,000 to corporations (Hutchinson, 1996). If animals are killed as a result of the pollution, violators may also be required to pay the value of the animals killed (Veenhuizen et al, 2000).

Inspection Programs

Ohio EPA and SWCD perform joint site inspections upon receiving a Site Inspection Request from operators/owners for proposed operations involving 1,000 animal units or more. Ohio EPA investigates complaints about the prohibited discharges of wastes from any size facility directly into state waters (Ohio Revised Code 6111), whether accidental or deliberate.

8.0 Voluntary Programs

Ohio DNR, Division of Soil and Water Conservation, offers voluntary compliance assistance and water pollution prevention programs. Other resources for livestock operators are available through voluntary programs administered by the Ohio State University Extension Service, Natural Resources Conservation Commission, Ohio Department of Agriculture, Ohio Department of Development, and Ohio EPA Division of Surface Water (Hutchinson, 1996).

Ohio producers are encouraged to voluntarily control pollution of state waters and they have several options for resource information. Ohio DNR, local SWCDs, and Ohio State University participate in the Manure Nutrient Management (MNM) program. This program is an intensive educational program that teaches operators how to collect, handle, store, and apply manure. The program also instructs operators on how to test manure and soil. (Specific tests were not identified by Veenhuizen et al.). Local SWCDs receive project grants from the Ohio DNR Division of Soil and Water Conservation. Projects are funded for 4 years and provide seed money to establish permanent positions. At one point, there were 22 SWCDs in 31 livestock

counties of the state. Nine innovative demonstration projects totaling \$98,883 were approved for funding (Veenhuizen et al, 2000).

In addition to its participation in MNM, Ohio DNR coordinates the activities of SWCDs and runs the Agricultural Pollution Abatement (APA) programs. Ohio DNR's Division of Soil and Water Conservation administers the Pollution Abatement Cost Sharing Program for voluntary implementation of APA. Projects are planned and approved by local SWCD Field Offices. The cost-share program annually uses \$850,000 to install best management practices (BMPs) to abate pollution by sediment and animal waste. Landowners can recover 75 percent of their cost up to \$7,500 per year (Veenhuizen et al, 2000).

Other agencies are involved in Ohio's voluntary programs. USDA-NRCS administers conservation programs and provides technical, research, educational, and financial assistance to farmers through the Ohio DNR and SWDCs. The Ohio Department of Development (ODD) helps farmers with site evaluation and selection for livestock expansion projects (Hutchinson, 1996).

9.0 Additional State-Specific Information

Cooperative Extension Service

Information regarding Ohio State University's Cooperative Extension Service can be obtained at www.ag.ohio-state.edu/. Refer to the Voluntary Programs section above for a description of some of Ohio State University's Extension Service programs.

Comprehensive Nutrient Management Plan (CNMP) Certification

Ohio does not have a CNMP certification program. Ohio EPA requires approval of a livestock waste management plan (manure management plan) only for facilities with more than 1,000 animal units. The plan does not require a certified planner; however Ohio EPA and local SWCD personnel can assist farmers with completing the plans (Veenhuizen et al, 2000).

For most animal operations, the storage, handling, and application of manure are regulated by Ohio DNR which encourages all AFOs to work with their local SWCD or USDA-NRCS to develop a livestock waste management plan. The Animal Waste Pollution Abatement Program, also administered by the Ohio Department of Natural Resources, is a standard used by Soil and Water Conservation District to determine whether a water pollution problem exists. Voluntary adoption of an approved manure nutrient management plan is suggested when the SWCD discovers a water pollution problem (Veenhuizen et al., 2000).

In 1990 Ohio DNR began a Manure Nutrient Management program in counties with the highest livestock population. Manure Nutrient Management technicians work with livestock producers to develop management plans to best manage animal manure and use it as a plant nutrient (Veenhuizen et al., 2000).

Case Studies/Innovative Programs

Ohio EPA Division of Surface Water, provides information, education, and assistance with Ohio EPA regulatory activities associated with animal waste. They assist in watershed planning, deliver financial and technical assistance, and help with local water quality monitoring activities.

Ohio EPA activities are funded through section 319 of Clean Water Act and Ohio Water Pollution Control Loan Fund. Funding for operators is available through Ohio EPA Water Pollution Control Loan Fund (WPCLF). Federal section 319(h) funds are available to support local watershed-based nonpoint source projects (Hutchinson, 1996).

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Oklahoma's CAFO Program

1.0 Background

The Oklahoma Department of Environmental Quality (ODEQ) administers the OPDES program in lieu of the NPDES program administered by EPA (EPA Region 6, 2000).

NPDES permits under ODEQ's jurisdiction will become state-administered OPDES permits and will be reissued (upon expiration) or modified by the state agency (USEPA Region 6, 2000). In accordance with the signed Memorandum of Agreement, EPA will retain temporary authority for all proposed permits until final issuance; permits contested under evidentiary hearing proceedings until those are resolved; and compliance assistance and enforcement for permits with outstanding compliance issues. ODEQ was authorized to issue general permits under the OPDES program on September 11, 1997 (EPA Region 6, 2000).

EPA retains authority for discharges in Indian Country, discharges from agricultural industries (regulated by the Oklahoma Department of Agriculture), and discharges associated with oil and gas exploration and production (USEPA Region 6, 2000).

Based upon information provided to EPA by USDA it is estimated that there are 398 AFOs with from 300 to 1,000 animal units and 174 AFOs with more than 1,000 animal units in Oklahoma (USDA, 1999; USDA, 2000).

2.0 Lead Regulatory Agency

Delegation of the NPDES program to Oklahoma in 1996 excluded CAFO regulatory authority. Region 6 has primary NPDES/CAFO regulatory authority. EPA Region 6 issues general permits for discharges from CAFOs in the EPA Region 6 states of New Mexico, Oklahoma, and Texas as well as CAFOs on Indian Country lands in these states (USEPA Region 6, 2000).

The Oklahoma State Board of Agriculture has authority to promulgate rules to implement and enforce the Oklahoma CAFO Act.

3.0 State Regulations Regarding AFOs/CAFOs

The Oklahoma CAFO Act and associated rules outline the enforceable requirements of CAFOs and give the Oklahoma Department of Agriculture regulatory authority over Oklahoma's CAFO program. Oklahoma regulations may be more stringent than the federal regulations. The Oklahoma CAFO Act (§2-9-202 et seq.) was designed to protect Oklahoma's water and air supplies by restricting CAFOs. The Act requires pre-site approval from the Department of Agriculture and requires the Department to monitor the construction of facilities and their liquid waste retention structures. The Act addresses setbacks, public hearings, pre-site approval, mandatory licensing, operating and construction standards, a pollution prevention plan, a waste management plan, education, annual inspections of licensed facilities, mechanisms for wildlife protection, property rights, and safety checks on irrigation systems. Licensed managed feeding operations (i.e., large operations using liquid waste management systems primarily in roof-covered structures) are defined as CAFOs under the state CAFO Act.

The state has also passed the Registered Poultry Feeding Operations Act (§2-10-9.7 et seq.). This Act requires poultry operations to use BMPs, have a waste management plan, and register

with the Oklahoma Department of Agriculture. The Act also provides that poultry feeding operations can be designated as CAFOs in certain circumstances, and discourages the land application of waste in nutrient-limited watersheds or in areas of nutrient-vulnerable ground water. Poultry operations licensed as CAFOs are not subject to registration requirements.

4.0 Types of Permits

NPDES

EPA Region 6 issued a general NPDES permit that covers Oklahoma CAFOs (two versions exist, one for impaired watersheds and one for non-impaired watersheds). Oklahoma has added its own buffer zone requirement to the general permit. The region 6 CAFO general permit was issued on March 10, 1993, and expired March 10, 1998. The Region is in the process of reissuing the general permit after revision and public comment.

Other

Legislation signed by Governor Frank Keating in 1997 and 1998 makes licensing of Licensed Managed Feeding Operations (LMFOs) (which are defined as CAFOs) mandatory. State licenses requiring the use of BMPs are required for roof-covered facilities using a liquid waste management system with more than 1,000 animal units of swine. Licenses are also required for discharges other than those related to 25-year, 24-hour storm events. Smaller facilities that are found to discharge or pollute may be required to obtain licenses as well.

5.0 Permit Coverage

The NPDES general permit issued by Region 6 covers CAFOs with 1,000 or more animal units or those with 300 to 1,000 animal units that discharge through a man-made conveyance or directly into state waters.

Oklahoma requires state CAFO licenses for facilities that fall under one of the following four categories:

Category 1

- Swine and poultry primarily housed in roof-covered structure
- Use liquid waste management system
- More than: 1,000 animal units on swine farms; 100,000 laying hens or broilers (continuous overflow watering); 30,000 laying hens or broilers (liquid manure systems)
- Discharge or no discharge

Category 2

- AFO with more than 1,000 animal units *and* any discharge

Category 3

- AFO with more than 300 animal units *and* discharge with artificial device *or* discharge directly into state water on facility (diffuse flow may be exempt)

Category 4

- Designated by Oklahoma Department of Agriculture as a significant contributor to pollution

of state water (NASDA, 1997; USEPA, 1998).

To receive a state license, a facility must first be an AFO defined as a facility with no vegetation or pasture and confining animals for 90 consecutive days in a 12-month period.

Poultry facilities may be subject to regulation if

- Poultry is kept at the facility 45 days or more per year
- Crops or vegetation is not sustained at the facility
- The facility produces more than 10 tons of poultry waste per year

State licenses have no effect on EPA NPDES CAFO permits (USEPA, 1998). However, any facility that holds the EPA NPDES CAFO general permit is required to obtain an Oklahoma CAFO license.

6.0 Permit Conditions

Approvals

Site appraisals are required by facilities to receive coverage under the general NPDES permit and by the state before the development of waste retention structures. A new license is required prior to expansion for LMFOs that want to expand by 5 percent or more.

Lagoon Design and Specifications

Developers are required to follow specific design standards. Waste retention structures must provide 21 days of storage, have a 1- to 2-foot freeboard, and control runoff from a 25-year 24-hour storm. Liners can be natural, geomembrane, or synthetic material. Allowable lagoon seepage is 10^{-7} cm/s or NRCS Technical Note 716 rates. LMFOs must provide for 180 days of storage.

Discharge Rules

The Region 6 CAFO NPDES general permit includes a 24-hour, 25-year discharge limit.

Waste Management Plans

Department of Agriculture approval of a pollution prevention plan and an animal waste management plan is required. The pollution prevention plan must include a description of potential sources of pollutants in facility runoff; a site map or topographic map outlining the drainage area of the CAFO; a list of significant material used, stored, or disposed of on the CAFO, sampling data; a description of the management controls, including structural and nonstructural controls, retention facility capacity, and design standards; a schedule for liquid waste removal; a permanent marker showing the volume required for a 25-year rainfall event within containment ponds; assurance that construction and design are in accordance with good engineering practices; evidence that no significant hydrologic connection exists between surface water and ground water; identity of areas that have a high potential for erosion; periodic dates for employee training; and the name of the person responsible for inspection and record-keeping.

Poultry statutes and rules require all poultry operators producing more than 10 tons of poultry waste to obtain and implement animal waste management plans and register with the Oklahoma

Department of Agriculture.

Separation Distances

The state requires waste structures to be separated 1 mile or more to 10 miles or more from occupied residences and more than 3 miles from city limits or state parks and requires a 1/4- to 2-mile setback depending on area and size. There are no standards for separation distance from property lines. Waste facilities must be at least 300 feet from public or private drinking water wells. The bottom of waste structures must be at least 10 feet from the maximum elevation of ground water (NASDA, 1997). Other setbacks are required for nonprofit camp or recreational sites, Oklahoma Scenic Rivers, Oklahoma historic property or museums, Outstanding Resource Waters, National and State Parks, and public drinking water wells and surface waters. The general NPDES permit issued in Oklahoma includes a buffer zone requirement.

Land Application Requirements

Nitrogen application is based on crop needs, not to exceed crop uptake. To protect ground water, irrigation systems must have safety check valves, an anti-syphon vent, a low-pressure escape drain, and an interlock device to prevent operation of the waste pump (NASDA, 1997).

Poultry facilities must apply at nitrogen crop uptake rates, but must not exceed USDA-NRCS Waste Utilization Standards for phosphorus.

Other Requirements

Swine facilities must develop odor abatement plans to avoid unnecessary and unreasonable odors. Annual soil and water tests are required to monitor excess accumulation of phosphate and nitrates in waste application and retention areas. Operators are required to use certain BMPs (NASDA, 1997).

Poultry statutes and rules require all operators producing more than 10 tons of poultry waste to conduct soil and litter testing. The producers must attend 9 hours of training the first year and 3 hours each year thereafter (US EPA, 1998).

7.0 Enforcement Information

Operators who violate the Oklahoma Concentrated Animal Feeding Operations Act may face fines of up to \$10,000 per day per violation or imprisonment in county jail for up to 6 months per violation. A person who is convicted of making a false statement may be found guilty of a misdemeanor and fined up to \$10,000 for each violation.

The state CAFO license provides a defense for license holders in civil nuisance suits (USEPA, 1998).

Inspection Programs

Routine on-site annual inspections, complaints, and unannounced inspections are used to identify violators. Some unpermitted CAFOs are identified through meetings and public hearings regarding permit availability. The state of Oklahoma performs regular inspections of permitted and licensed CAFOs and conducts complaint-driven inspections of other AFOs. HB 1522 and

SB 1175 expressly give the Department of Agriculture the right to make annual, unannounced facility inspections.

8.0 Voluntary Programs

To achieve its goal of protecting and sustaining the environment, the Agriculture and Natural Resources section of the Oklahoma Cooperative Extension Service helps farmers to understand new CAFO regulations and offers advice on nutrient management. Some federally funded programs offered by the extension service are the Hydraulic Unit Area Demonstrations (to show the effect of BMPs), the Contaminant Loading Program, and various sediment programs (targeted at construction). The Oklahoma Farm and Ranch*A*Syst program (which protects water wells and ground water) and the Oklahoma*A*Syst program (which protects ground water) are other programs that may benefit livestock producers. They provide educational programs and demonstrations of BMPs. The state provides education and training on the proper maintenance of facility. Where applicable, USDA EQIP funding is used as an incentive for good practices.

9.0 Additional State-Specific Information

Cooperative Extension Service

Information regarding Oklahoma State University's Cooperative Extension Service can be obtained at www.dasnr.okstate.edu/oces/.

Comprehensive Nutrient Management Plan (CNMP) Certification

Oklahoma does not have a CNMP preparer certification program for CAFOs. The Registered Poultry Feeding Operations Act (Title 35, Chapter 17, Subchapter 5) requires that every poultry operation submit an animal waste management plan (AWMP) prepared by USDA-NRCS or an entity approved by the Oklahoma State Department of Agriculture. The CAFO Act (Title 35, Chapter 17, Subchapter 3) for Licensed Managed Feeding Operations (operations using liquid animal waste management systems) also requires operations to prepare an animal waste management plan.

The Oklahoma Department of Agriculture requires education and training for poultry waste handlers and employees of LMFOs.

The Registered Poultry Act of July 1, 1998, requires that poultry operators attend educational courses on poultry waste handling. The CAFO Act for LMFOs requires that all current and new employees of LMFOs responsible for work activities that relate to regulatory compliance must be regularly trained and informed of any information pertinent to the proper operation and maintenance of the facility and waste disposal (35:17-3-18). The CAFO Act also requires employees to provide proof of certification to the Oklahoma Department of Agriculture that the formal education requirements were satisfactorily completed.

The Oklahoma Department of Agriculture developed the program for the training and education of the owner or operator of poultry operations and LMFOs. Curricula and course content for LMFO operator training was developed under the supervision of Oklahoma State University Cooperative Extension Service (35:17-3-18).

All current and new poultry operators are required to attend no less than 9 hours of training during the first year of the Registered Poultry Act and no less than 3 hours each year thereafter (Oklahoma Department of Agriculture 2000).

All current and new LMFO employees responsible for treatment, storage, or application of animal waste are required to attend waste management and odor control courses. Educational requirements include 9 hours of training the first year and 3 hours of training each year thereafter. The training must include (35:17-3-18):

- Proper operation and maintenance of waste retention structures, including proper water level maintenance.
- Land application of wastes, proper operation, and maintenance of facility.
- Good housekeeping and material management practices.
- Necessary record-keeping requirements.
- Spill response and cleanup.

Case Studies/Innovative Programs

Oklahoma LMFOs are required to develop odor abatement plans and pest management plans.

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Oregon's CAFO Program

1.0 Background

In Oregon NPDES permits are required for facilities that discharge pollutants to surface waters and include both state and federal requirements. Water Pollution Control Facilities (WPCF) permits are issued for systems that do not directly discharge to surface water. The NPDES and WPCF programs issue both individual and general permits. In Oregon CAFOs are covered by general WPCF permits.

The Oregon Department of Agriculture (ODA) is the primary agency with the responsibility of protecting water from agricultural point and nonpoint source pollution. In 1995 Oregon passed the Agricultural Water Quality Management Act (AgWQM), which directs ODA to work with farmers and ranchers to develop Agricultural Water Quality Management Area Plans for watersheds. This is a voluntary program that encourages farmers to use best management practices (BMPs) in designated watersheds with AgWQM Area Plans. Nutrient management plans are not required even though nutrient runoff is one of the problems the AgWQM Area Plans can address on a local level (ODA 2000a).

Based on information provided to EPA by the U.S. Department of Agriculture (USDA), it is estimated that there are 240 AFOs with from 300 to 1,000 animal units and 70 AFOs with more than 1,000 animal units in Oregon. These are primarily in the dairy and poultry (turkey) livestock sectors (USDA, 1999; USDA, 2000).

2.0 Lead Regulatory Agency

Oregon's Confined Animal Feeding Program began in the early 1980s. CAFOs in Oregon are regulated by ODA's Natural Resources Division. The most recent development in Oregon's CAFO program was the implementation of Senate Bill 1008, enacted in the 1993 session. This bill, which was introduced at the request of the Oregon Dairy Farmers' Association, provides the ODA statutory authority to administer the entire CAFO program, from the issuance of permits through enforcement, including civil penalty assessment.

3.0 State Regulations Regarding AFOs/CAFOs

NPDES general permits are issued under the authority of OAR 340-45-005 through 340-45-065. NPDES individual permits are issued under the authority of ORS 468B.050 and OAR 340-45-005 through 340-45-065. WPCF general and individual permits are issued under the authority of ORS 468B.050, OAR 340-14, and OAR 340-71 and in accordance with OAR 340-40 (DEQ, 1999). Farmers are required to obtain permits to construct, install, modify, or operate a CAFO wastewater containment or disposal system under ORS 468B.050. Since 1993 ODA has had authority to administer the entire CAFO program (Searle, 1997).

CAFOs are exempted by state law from air quality regulation. They may be required to observe land use compatibility laws, Oregon Safety and Health Administration rules, and food sanitary and safety requirements (NASDA, 1997).

4.0 Types of Permits

NPDES

Oregon is authorized to administer the federal NPDES permit program. The Oregon NPDES program issues both general and individual permits, which are valid for a maximum of 5 years (DEQ, 1999). Oregon has elected to issue state WPCF permits to CAFOs instead of NPDES permits.

Other

All Oregon CAFOs that have wastewater containment or disposal systems and confine animals for at least 4 out of 12 months must obtain coverage under a comprehensive general WPCF permit (DEQ, 1990c). The WPCF permit bases the maximum number of animals that can be confined at a facility on the capacity of the wastewater treatment system specified in the permit. CAFOs may not exceed the maximum by more than 10 percent or 25 animals, whichever is greater. Though the modified permit, which was issued on October 8, 1990, has no expiration date, it may be modified or revoked by DEQ.

CAFOs that handle all manure in the dry state and prevent dry manure from getting into water systems are exempt, although a permit may be required if the facility has other wastewaters. The conditions of the general permit are as follows:

- The wastewater containment system must be sufficient to contain wastewater when it cannot be safely applied to cropland.
- All manure and various forms of wastewater must be contained during the winter and applied to cropland at agronomic application rates during the summer.
- Written approval of detailed plans and specifications must be obtained from ODA before constructing or modifying wastewater control facilities.

ODA's Natural Resources Division issues another state permit for construction or modification of CAFOs. Individual permits may be required to protect ground water.

5.0 Permit Coverage

The WPCF permit is required for any CAFO with a wastewater system that confines animals for 4 months or more out of a 12-month period, including dog kennels. Oregon's definition for "confined animal feeding operations" as it appears on the permit does not specify an animal unit threshold. The NPDES general permit does not include activities covered by an individual WPCF permit until that permit has expired or has been canceled. (A person may request to have the individual permit canceled as long as the activity is covered by the general permit.)

6.0 Permit Conditions

Approvals

A site appraisal is required before development. Producers who wish to construct facilities, commence operations, or substantially modify an operation permit must submit plans and

specifications for the facility and obtain written approval for the action (Copeland et al., 1999).

Lagoon Design and Specifications

CAFOs are required to follow a specific design standard for waste management systems. The standards are found in "Guidelines for the Design and Operation of Animal Waste Facilities" (ORS 340.051). Lagoons should be designed to hold maximum accumulated rainfall and manure runoff from the entire collection area for the maximum period of accumulation. All manure and various forms of wastewater must be contained during the winter and applied to cropland at agronomic rates during the summer, and written approval of detailed plans and specifications must be obtained from ODA before constructing or modifying wastewater control facilities. Liner materials vary based on the situation, but lagoons and collection slumps should be constructed of well-compacted, good-quality soil and stabilized with vegetation recommended by the Agricultural Research Service (Copeland et al., 1999). The lagoon seepage allowed is 10^{-7} cm/sec or $\leq 1/8$ foot/day. A 2-foot freeboard satisfies storage capacity requirements (NASDA, 1997).

Discharge Rules

No information was found in publically available sources.

Waste Management Plans

No information was found in publically available sources.

Separation Distances

Separation distances from dwellings and property lines are determined by local land use ordinances. Wells must be 100 feet from the feedlot. There are no state standards regarding distance between waste structures and ground water (NASDA, 1997).

Land Application Requirements

Application of waste must not exceed annual agronomic rates. Wastewater must be dissipated by evaporation (NASDA, 1997). Slurries that are applied by a tank wagon or truck should be spread uniformly. Liquid manure irrigation systems have to be operated according to a predetermined plan of rotation to ensure that coverage is uniform. Adequate land for the effective assimilation of manure slurry must be provided year-round. Solid animal waste must also be applied to the land uniformly. Solids should not be overapplied or deposited where they can be washed away into surface water drainage.

Other Requirements

Operators may be required to use BMPs (Searle, 1997). Dead animals must be disposed of by approved methods.

7.0 Enforcement Information

ODA has the authority to assess civil penalties for permit violations and to levy fines for failure to obtain appropriate permits. Oregon DEQ also plays a role in enforcement and may assess

certain penalties against violators.

Three kinds of enforcement actions are described by ORS 603.074.0040: the Notice of Noncompliance, the Plan of Correction, and the Notice of Civil Penalty Assessment. Each of these documents is issued by the Director of the State Department of Agriculture, must be in writing, and must be served to violators personally or through certified or registered mail. The Notice of Compliance notifies the owner or operator of a CAFO that a permit violation has occurred. It must reference the particular statute, administrative rules, or order involved; where the violation occurred; and when the violation occurred. The notice of violation also includes the steps that the owner or operator may take to correct the problem and suggests a reasonable time frame for doing so. A Plan of Correction states the actions that must be taken by an owner or operator to eliminate a violation and a schedule for accomplishing the requirements. Failure to correct the problems may result in the issuance of a Notice of Civil Penalty. A person receiving a Notice of Civil Penalty may request a hearing.

Producers have the opportunity to negotiate remedial actions with ODA and Oregon DEQ for permit violations. The State of Oregon does take action against animal production operators that violate the terms of their permits and pollute the waters of Oregon. CAFOs will be fined \$500 for not having a permit when one is required. A \$1,000 annual inspection fee in lieu of the \$25 fee will be assessed for 3 years if an operator has been assessed a civil penalty by DEQ (DEQ, 1990c).

Inspection Programs

Under a 1987 statute, ODA has the authority to inspect CAFOs for compliance. Violators are identified through complaints, aerial surveys, and periodic inspections. Routine on-site inspections are not required. To determine which CAFOs were a priority for scheduled ground inspections, flyovers were implemented in the Tualatin River Basin. Flyovers continue to be used as a tool for prioritization in other watersheds of Oregon.

Inspection in Oregon consists of announced inspections. Joint inspections conducted by ODA and USEPA are unannounced. Announced inspections are routine, whereas joint inspections typically occur during wet weather conditions. In past years, an average of 30 joint inspections have been conducted annually. Most Oregon CAFOs are dairies, and the bulk of inspected facilities are dairies (USEPA, 1998).

8.0 Voluntary Programs

Education, training, and technical assistance programs are available from NRCS, SWCDs, Oregon's extension service, and private engineers (NASDA, 1997).

State programs have not been identified. At the federal level, Oregon farmers who intend to construct farm wastewater containment systems are encouraged to enroll in USDA/FSA cost-sharing programs. Federal cost-share programs are used to encourage good practices.

ODA has been involved in education and outreach that includes explaining the EQIP process to producers (USEPA, 1998).

9.0 Additional State-Specific Information

Cooperative Extension Service

Information regarding the Oregon State University Cooperative Extension is available at <http://osu.orst.edu/extension>.

Comprehensive Nutrient Management Plan (CNMP) Certification

Oregon does not have a CNMP preparer certification program. Oregon State issues Water Pollution Control Facility Permits to CAFOs. These permits do not require a nutrient management plan (ODA 2000).

10.0 References

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USDA. 2000. Specific queries conducted on the 1997 Census of Agriculture published data. U.S. Department of Agriculture.

USEPA. 1998. *Efforts to Improve Controls on Concentrated Animal Feeding Operations (CAFOs)*. Results of June 1998 Survey of States and Regions compiled by G. Beatty. U.S. Environmental Protection Agency, Office of Water, Washington, DC.

Pennsylvania's CAFO Program

1.0 Background

In February 1999 Pennsylvania's Department of Environmental Protection (DEP), Bureau of Water Protection (WQP), released its CAFO Strategy in a document titled *Final Strategy for Meeting Federal Requirements for Controlling the Water Quality Impacts from Concentrated Animal Feeding Operations*. The strategy uses tools already in place to control excess nutrient runoff from Pennsylvania's CAFOs. The strategy aims to ensure facilities are constructed and operated in an environmentally sound manner while allowing producers to pursue profitable and technologically sound agricultural production (PA DEP, 2000a).

To provide consistency with other state laws, the strategy uses the term *animal equivalent unit* (AEU), defined by Pennsylvania's 1996 Nutrient Management Act, in place of the federal term *animal unit* (AU). AEUs are based on animal weight, and one AEU is equal to one pound of animal weight; AUs are based on the number of animals. Pennsylvania considers the AEU to be as protective of water quality as the AU (PA DEP, 2000a).

Based upon information provided to EPA by USDA it is estimated that there are 704 AFOs with 300 to 1,000 animal units and 313 AFOs with more than 1,000 animal units in Pennsylvania. These are primarily in the swine, broiler, and layer sectors (USDA, 1999; USDA, 2000).

2.0 Lead Regulatory Agency

The State Conservation Commission and the Department of Environmental Protection have authority to regulate the state's CAFOs under Title 25 of the Pennsylvania code.

3.0 State Regulations Regarding AFOs/CAFOs

Under the State Clean Streams Law (35 P.S. §§691,169.1001) 25 PA Code Chapter 101 requirements were adopted in 1997 to cover the storage, handling, and application of manure. The requirements cover all operations that produce, store, or apply manure by regulating design, construction, and operations of all manure storage facilities and rates of manure application. Under the Nutrient Management Act of 1993 (3 P.S. §§1701, 1718), 25 PA Chapter 83 Subchapter D became effective in October 1997. It assures proper handling and application of manure from CAFOs. Agricultural status exempts CAOs from air quality regulation, but CAOs must obey state wetland regulations.

4.0 Types of Permits

NPDES

Pennsylvania is authorized to administer the NPDES program. DEP proposes additional requirements for large farming operations (those with more than 1000 AEUs). These additional requirements are a Preparedness, Prevention and Contingency (PPC) plan; a Water Quality Management Part II CAFO permit for new or expanded manure storage facilities and Professional Engineer's certification for existing manure storage facility design, construction, and operation; and an importer or broker agreement for addressing the storage and/or land application of exported manure. These are new requirements (PA DEP, 2000a).

Other

The following, where applicable, are required for all CAFOs:

- An approved Nutrient Management Plan under the Pennsylvania Nutrient Management Regulations.
- Implementation and availability of the Chapter 102 Erosion and Sedimentation Control Plan for earthmoving activities, including plowing and tilling where manure is applied.
- An NPDES Permit for storm water discharges for earth disturbance of 5 acres or more.

5.0 Permit Coverage

All CAFOs in Pennsylvania must obtain coverage under an NPDES CAFO Permit (PA DEP, 2000b).

The following operations must operate under an Individual NPDES Permit:

- Existing operations with more than 1,000 AEUs and in a Special Protection Watershed.
- New or expanding operations with more than 1,000 AEUs.
- New, expanding, or existing CAOs with more than 300 AEUs located in a Special Protection Watershed.
- Any operation with a direct discharge to surface waters during a storm event less than a 25-year, 24-hour storm.

The following operations that are not in Special Protection Watersheds may operate under a General NPDES Permit:

- Existing CAOs with more than 300 AEUs
- Existing operations with more than 1,000 AEUs
- New or expanded CAOs with 301 to 1,000 AEUs

An operation that existed on or before January 16, 1998, is considered an existing operation. A General NPDES Permit is contingent upon approval of the Nutrient Management Plan by the conservation district or the State Conservation Commission.

6.0 Permit Conditions

Instructions for completing and submitting a Notice of Intent for Coverage under the CAFO NPDES General Permit are provided at:

www.dep.state.pa.us/dep/deputate/watermgt/WQP/Forms/PM-WQ0032In.pdf.

Approvals

CAFOs with more than 1,000 AEUs and operators with plans prepared under the Nutrient Management Act must obtain registered Professional Engineer certification that the design and construction of existing, new, or expanded liquid and semi-solid manure storage facilities comply with the standards of the "Pennsylvania Technical Guide." (PA DEP, 2000a).

Lagoon Design and Specifications

- All agricultural operations with more than 1,000 AEUs must provide at least a 2-foot freeboard for new or expanded waste storage facilities at all times.
- An agricultural operation with 1,000 AEUs or less must provide at least a 12-inch freeboard for waste storage ponds and at least a 6-inch freeboard for waste storage structures.
- Agricultural operations with more than 1,000 AEUs must provide at least 12 inches of freeboard on existing waste storage ponds and 6 inches on existing waste storage structures (as described in the "Pennsylvania Technical Guide"), and these facilities must be certified by a Pennsylvania registered Professional Engineer to be adequate.

Manure storage facilities where the manure is of semi-solid or liquid consistency must be designed, constructed, and certified by a Pennsylvania registered Professional Engineer.

All manure storage ponds must be designed in accordance with Standard PA-425 and Standard PA-313. The manure storage ponds must be watertight for the containment of waste and lined with a compacted clay soil. Soil liners must be designed and built in accordance with Appendix 10D of the *Agricultural Waste Management Field Handbook*. Manure storage should be designed and built of concrete, steel, durable plastic, or a combination of these materials, and should be designed and built to prevent leaching or runoff of contaminated water into surface water or ground water.

Discharge Rules

All practices must be designed in accordance with the "Pennsylvania Technical Guide" standards and the *Manure Management for Environmental Protection Manual* and must prevent or eliminate the discharge of manure or contaminated water under all weather conditions up to the 25-year, 24-hour storm.

Waste Management Plans

The Pennsylvania Nutrient Management Regulations (Title 25, Chapter 83.201 et seq.) require an operation classified as a CAO to submit a complete Nutrient Management Plan for approval to a delegated County Conservation District or the State Conservation Commission. A CAO plan must be implemented according to the schedule in the approved plan. The plans cover the following:

- Farm identification
- Plan summary
- Best management practices schedule
- Nutrient application
- Excess manure utilization
- Manure management, including barnyard areas
- Storm water runoff control
- Manure storage facilities

Separation Distances

There are no separation distance standards pertaining to dwellings. Title 25 places limitations on how close to property lines, wells, and waterbodies facilities may be constructed. Manure

storage facilities must be 100 to 300 feet from a property line, 100 to 200 feet from a private well, 100 to 400 feet from a public well, and 100 to 200 feet from streams and sinkholes. The distance placed between waste structures and ground water and the land requirements are based on nitrogen uptake (PA State CAFO Standards Survey Response, 1997).

Land Application Requirements

CAFO owners and operators should follow the requirements detailed in PA DEP's *Field Application of Manure*. The manual describes approved practices for the application of livestock and poultry manure in Pennsylvania and serves as a supplement to *Manure Management for Environmental Protection*. It works in conjunction with requirements under the Nutrient Management Act and the Pennsylvania Strategy for CAFOs.

If manure is applied to CAFO owned or leased land, the CAFO operator is responsible for:

- Nutrient Management Plan (NMP)
- Implementation of NMP
- Storage of manure until applied
- Application of manure

If manure is applied under an agreement between a CAFO operator and an importer,

- CAFO operator is responsible for
 - Providing and signing agreement
 - Preparing and maintaining nutrient transfer sheet
 - Providing informational packets (25 PA Code 83.344)
 - Providing Nutrient Balance Sheet (NBS), if farm is not covered by NMP
- Importer is responsible for
 - Signing and implementing agreement
 - Optional: Developing NMP
 - Implementation of NMP or NBS
 - Storage after delivery and before manure is applied, if applicable
 - Compliance with *Manure Management Manual*
 - Erosion and Sedimentation Control Plan

Application of manure is the responsibility of the party under whose control the manure is spread. This party may be the CAFO operator or the importing farmer, depending on the agreement.

If agreement between CAFO operator and broker,

- CAFO operator is responsible for
 - Providing and signing agreement
 - Preparing manure transfer sheet
 - Providing informational packets (25 PA Code 83.344)
 - Providing manure transfer sheets
- Broker is responsible for
 - Signing and implementing agreement
 - Storage of manure until applied
 - Meeting requirements of section 83.344, relating to exported manure informational packet

- Maintaining name, location, address, and amount of manure delivered to each site

7.0 Enforcement Information

DEP, the Pennsylvania Farm Bureau, and the County Conservation Districts will continue to cooperatively address complaints for farming operations outside the permit requirements for CAFOs. DEP has the responsibility for ensuring compliance with CAFO permit requirements. Operators of CAFOs, like all other NPDES and Part II permit holders, will be subject to self-inspection and record-keeping as part of their NPDES and Part II Permits. Ensuring compliance with requirements relating to the permits and other enforcement will be carried out by DEP. Where DEP determines noncompliance has occurred, appropriate action will be initiated to abate pollution (PA DEP, 2000a).

Inspection Programs

Inspections are generally complaint-driven. Violations are also discovered during random compliance checks conducted by authorized program staff and during triannual reviews. Now, PA DEP will inspect all CAFOs with more than 1,000 AEUs at least annually. Reviews are conducted by certified planners, who must evaluate and report on the operation's consistency with the plan (PA State CAFO Standards Survey Response, 1997).

Over the next 3 years, DEP plans to assess potential discharges of manure from existing manure storage facilities on existing CAOs with more than 1,000 AEUs, beginning with CAOs in High Quality and Exceptional Value watershed areas (PA DEP, 2000a).

CAFOs with an NPDES or Part II permit will be subjected to self-inspection. Those CAFOs with more than 1,000 AEUs must submit self-inspection reports on a quarterly basis (PA DEP, 2000a).

8.0 Voluntary Programs

Any operation that is not a CAO may voluntarily submit a Nutrient Management Plan for approval to a delegated County Conservation District or the State Conservation Commission under the Nutrient Management Act (Act 6). Operations with voluntary plans will receive the benefits of the plan only to the extent that the plan is implemented. Benefits may include limited liability protection, operational efficiency, pollution prevention, and financial and technical assistance. Nutrient management plans and runoff controls are required for facilities that have 2 AEUs/acre/year or more.

9.0 Additional State-Specific Information

Cooperative Extension Service

Information about the Pennsylvania State University, College of Agricultural Sciences, Cooperative Extension and Outreach is available at www.extension.psu.edu/.

Comprehensive Nutrient Management Plan (CNMP) Certification

The State Conservation Commission developed regulations outlining requirements for Nutrient Management Plans based on Pennsylvania's experience with the Chesapeake Bay Program and

the input of the Nutrient Management Advisory Board, DEP, the Department of Agriculture, and other stakeholders (PA DEP, 2000a).

The Nutrient Management Act requires plans be developed by a nutrient management specialist certified by the Department of Agriculture. The Plans are reviewed by certified nutrient management specialists employed by county conservation districts, which may be delegated the responsibility for overseeing plan implementation, maintenance, record-keeping, and compliance (PA DEP, 2000a).

A Nutrient Management Plan (NMP), which includes a Contingency Plan required by the nutrient management regulations for emergency planning and response to manure spills and related discharges, is required for all CAFOS. The NMP must be submitted for approval to the county conservation district (CCD) or State Conservation Commission (SCC). The plan is approved at a regularly scheduled meeting of the county conservation district board, as provided by the Nutrient Management Act. The CCD or SCC must approve the NMP before the NPDES CAFO permit coverage becomes effective. As required by the regulations implementing the Nutrient Management Act, a registered Professional Engineer must certify that the design and construction of any new manure storage facility is consistent with the "Pennsylvania Technical Guide." This certification must be submitted to the DEP (PA DEP, 2000a).

Nutrient Management Plans are required for approximately 1,600 CAOs in Pennsylvania. In addition, both the Nutrient Management Act and its implementing regulations encourage nonregulated farming operations to develop and implement voluntary nutrient management plans. The State Conservation Commission, county conservation districts, DEP, and the Department of Agriculture strongly encourage all livestock and poultry farmers to prepare and implement Nutrient Management Plans for their operations (PA DEP, 2000a).

Case Studies/Innovative Programs

To help promote the implementation of proper manure management, the Department of Agriculture, the State Conservation Commission, and the state Treasury Department have developed a program to make up to \$25 million available in low-interest loans to farmers to implement best management practices for manure storage and handling and land management. This assistance will supplement cost share funds already available under the Chesapeake Bay Program in the Chesapeake Bay drainage area, as well as federal EQIP funds and other local, state, and federal funding available statewide (PA DEP, 2000a).

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Rhode Island's CAFO Program

1.0 Background

Based upon information provided to EPA by USDA it is estimated that there are 66 AFOs with from 300 to 1,000 animal units and no AFOs with more than 1,000 animal units in Rhode Island. These are primarily in the turkey livestock sector (USDA, 1999; USDA, 2000).

2.0 Lead Regulatory Agency

The Rhode Island Department of Environmental Management (DEM) is the lead agency regarding CAFOs (Voorhees, 1997). Information about DEM can be found at www.state.ri.us/dem/.

3.0 State Regulations Regarding AFOs/CAFOs

The Rhode Island Pollution Discharge Elimination System (RIPDES) is used to address CAFOs.

4.0 Types of Permits

NPDES

Rhode Island administers the NPDES through the issuance of state RIPDES permits.

5.0 Permit Coverage

AFOs are identified on a case-by-case basis and through the 1,000 animal unit threshold. A significant point discharge may prompt the state to treat an operation as a CAFO (Voorhees, 1997).

6.0 Permit Conditions

No information was found in publically available sources.

7.0 Enforcement Information

No information was found in publically available sources.

8.0 Voluntary Programs

No information was found in publically available sources.

9.0 Additional State-Specific Information

Cooperative Extension Service

The University of Rhode Island Cooperative Extension does not provide any agricultural programs related to confined animal feedlots. More information about the Extension can be found at www.uri.edu/ce/index1.html.

Comprehensive Nutrient Management Plan (CNMP) Certification

Rhode Island does not have a CNMP preparers certification program.

10.0 References

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South Carolina's Animal Waste Management Program

1.0 Background

Before 1967, the South Carolina Department of Health and Environmental Control (DHEC) encouraged farmers to voluntarily comply with the South Carolina Pollution Control Act (PCA). DHEC issued permits in the 1960s and between 1967 and 1970 the number of permitted facilities increased to 100. These numbers grew to 800 permitted facilities in the 1970s and 1,000 in the 1980s. Still, until 1998 there were no specific formal regulations for agricultural facilities, so the Department relied on an evolving set of permitting guidelines. The regulations that became effective used many of the criteria from the 1996 Confined Swine Feeding Operations Act (DHEC, 2000c).

Today there are 1,300 permitted agricultural facilities in South Carolina. As is the case all over the country, the types of farms have changed in recent years from small family farms to an increasing number of larger animal growing operations. Integrators are now a common part of the South Carolina CAFO universe (DHEC, 2000c).

Based upon information provided to EPA by USDA it is estimated that there are 295 AFOs with from 300 to 1,000 animal units and 233 AFOs with more than 1,000 animal units in South Carolina. These are primarily in the broiler sector (USDA, 1999; USDA, 2000).

2.0 Lead Regulatory Agency

The South Carolina Department of Health and Environmental Control (DHEC) is given authority to promulgate environmental regulations, including regulations for South Carolina's CAFOs, under the South Carolina Pollution Control Act (PCA). DHEC information can be found at www.state.sc.us/dhec/ and the specific language of the PCA can be found at www.lpittr.state.sc.us/code/t48c001.htm.

3.0 State Regulations Regarding AFOs/CAFOs

The PCA is the basis for South Carolina's water pollution control and water quality protection programs. The law allows DHEC to use a range of activities such as permitting, inspections, compliance monitoring, enforcement, and public education to conduct the water pollution control program. Section 48-1-100 of the PCA requires permits for handling, storage, treatment, and disposal of animal waste (defined as sewage) and dead animals ("other waste"). Section 48-1-110 of the PCA requires submission and approval of plans, including waste management plans, before any disposal system can be built, operated, or modified (DHEC, 2000e).

South Carolina has been regulating animal operations since 1956 (Gray, 1995). Regulations related to animals, livestock, and poultry can be found in Title 47 of the Code of Laws of South Carolina, 1976. The title was amended in 1996 to include Chapter 20, which pertains specifically to the regulation of confined swine feeding operations, including provisions for regulation of odors and other "nuisances." Specific language of Title 47, Chapter 20, can be found at www.lpittr.state.sc.us/code/t47c020.htm.

The South Carolina Confined Swine Feeding Operations Act was enacted in 1996 to establish criteria for "mega" swine facilities that regulate these large swine facilities because of their potential to cause significant environmental harm if not properly regulated. Specific language of

the Act can be found at www.state.sc.us/dhec/eqc/water/html/aglaw&r.html. On June 26, 1998, Regulation 61-43 became effective, covering all animal facilities (DHEC, 1999e). Prior to these regulations, DHEC used guidelines. These regulations are based on the Confined Swine Feeding Operation Act. The regulations are divided into three parts: Part 100 addresses swine facilities, Part 200 addresses all other animal facilities, and Part 300 addresses innovative and alternative technology and applies to facilities regulated by Parts 100 and 200 (DHEC, 2000e).

Regulation 61-82, Proper Closeout of Wastewater Treatment Facilities, does not give specific methods for closure but does provide information relating to lagoon closures, and it requires proper disposal of all water materials. It applies to any facility that has been closed 5 or more years. It involves submission of a report to DHEC for approval (DHEC, 2000e).

4.0 Types of Permits

NPDES

South Carolina is authorized to administer the federal NPDES program and may issue general and individual NPDES permits (Linville, 1997). The state's NPDES regulations mirror the federal regulations. However, South Carolina does not issue NPDES permits in favor of no-discharge state permits.

Other

South Carolina has issued a general permit and individual state permits to CAFO operators with the requirement that no discharge is allowed. The state permits cover operations with waste treatment systems serving 1,000 animal units or more. Smaller operations are issued the same permit as larger operations, but the permit requirements may be different. South Carolina requires 5-year renewable Permits to Construct and Permits to Operate (Gray, 1995).

South Carolina uses a three-tiered approach to permitting new facilities under Regulation 61-43 as follows:

- **Tier One** — covers facilities with a capacity of 10,000 pounds or less of normal production animal live weight. They do not need a permit unless specifically required on a case-by-case basis by DHEC.
- **Tier Two** — covers facilities with 10,000 to 29,999 pounds of normal production animal live weight. They are not required to get a permit unless specifically required on a case-by-case basis by DHEC
- **Tier Three** — covers facilities with 30,000 pounds or more of animals live weight. These facilities are required to obtain permits (DHEC, 2000b).

Existing facilities are deemed permitted and do not have to apply for a permit unless they have been closed for 5 or more years. Deemed permitted facilities do not have to apply for a permit unless they are expanding or adding a waste utilization area, a composter, a stacking shed, and the like. If a facility has been closed between 2 and 5 years, DHEC may review and modify the permit if necessary. Expansion of a facility with a lagoon is not defined by the increase in permitted animals, but rather by expansion of the lagoon itself to accommodate more animals. For facilities with dry manure handling, expansion means an increase in the number of permitted

animals (DHEC, 2000b).

5.0 Permit Coverage

Although South Carolina has chosen not to cover any of its facilities by federal NPDES permits, the state uses the federal definition of a CAFO operation as a mechanism for permitting. Smaller operations that discharge and are potentially polluters of state waters are designated CAFOs on a case-by-case basis. The minimum requirements of the NPDES program are used as a basis for issuing state permits to facilities. South Carolina has historically treated and regulated waste lagoons as treatment plants (Gray, 1995).

6.0 Permit Conditions

Approvals

A letter of consent for new lagoons is required from any property owner whose property lines are less than 1,000 feet from a proposed site.

Lagoon Design and Specifications

Waste management systems must be built in accordance with Standards 312, 359, and 633 of the Soil Conservation Service (SCS) Field Office Technical Guide. Standard 312 discusses the purpose and content of the waste management system, and Standard 633 describes waste utilization or nutrient management. Some requirements for design, construction, and operation of waste treatment lagoons specified in Standard 359 are as follows (Gray, 1995):

- Lagoons must be located on slowly permeable soils, not gravel and shallow fractured soils.
- Synthetic or soil-packed liners must be used if a lagoon is not self-sealing.
- Lagoons must provide storage for the 25-year 24-hour storm.
- Specific guideline for the geographic region must be followed.

Discharge Rules

Discharges are prohibited except in the case of the 25-year, 24-hour storm.

Waste Management Plans

Waste management plans are required for all facilities that confine animals with more than 10,000 pounds and less than 30,000 pounds of live animal weight (ranged animal facilities do not require a waste management plan). Waste management plans must be submitted to the DHEC for review; an NPDES permit is not required. Facilities with 30,000 pounds live animal weight or more must submit and implement a waste management plan and have an NPDES permit.

Waste management plans must comply with Regulation 61-43. As of 1998, waste management plans have become more sophisticated and address odor control, vector control, and other nuisances; protection of ground water and surface waters; and aesthetic considerations (DHEC, 2000b).

Tier One facilities must develop and implement a waste management plan, but they do not have to submit it to DHEC. Tier Two and Tier Three facilities must develop and implement a waste management plan and must submit the plan to DHEC for approval before the facility can begin operations (DHEC, 2000b).

The waste management plan provides the details of handling, storage, treatment, and disposal of animal waste and dead animals generated at the facility. The plan includes information on agronomic application of manure and identifies available land for land application. A cropping plan (crop schedule) is also included. In addition, an odor abatement plan, a vector abatement plan, a soil monitoring plan, and an emergency plan are included as part of the waste management plan package (DHEC, 2000b).

A South Carolina registered Professional Engineer or the Natural Resources Conservation Service (NRCS) must prepare waste management plans for proposed facilities. After the facility has been constructed, but before operations begin, the preparer of the waste management plan must certify that the facility has been built according to the plan (DHEC, 2000b).

Separation Distances

All siting requirements for CAFOs must be measured from property lines (South Carolina General Assembly Bill 3446). After June 30, 1996, specific requirements (including the 1996 Confined Swine Feeding Operations Act/Swine Bill) were placed on CAFOs based on the normal production of live animal weight at a facility at one time. The Bureau of Water Agricultural Program (DHEC, 2000d) published this summary of setback requirements (with setback specifically by the 1996 Swine Bill):

Barns, Stables, Pens, or Growing Houses (not including lagoons, storage pond, or waste utilization areas)

1. Wells
 - a. Human drinking water wells — 200 feet (excluding that of the applicants, which must be 50 feet)
 - b. Animal drinking water wells — 50 feet (per Reg. 61-71)
2. Ditches
 - a. That drain to waters of the state excluding ephemeral and intermittent streams — 100 feet (Swine Bill)
 - b. That drain to ephemeral or intermittent streams — 50 feet
3. Property lines
 - a. Large facilities (420,000 or more pounds of capacity) — 1,000 feet (may be reduced by written waiver with the adjoining property owner after recording in the county's Office of Register of Mesne Conveyance)(Swine Bill)
 - b. Small facilities with a capacity of
 - i. 0 to 210,000 pounds — 200 feet
 - ii. 210,000 to 420,000 pounds — 400 feetNote: Distances may be reduced with permission from the adjoining property owner.
4. Waters of the state including ephemeral and intermittent streams — 100 feet

Lagoons or Waste Storage Ponds

1. Wells
 - a. Human drinking water wells — 500 feet (Swine Bill)
 - b. Animal drinking water wells — 100 feet (per Reg. 61-71)
2. Ditches
 - a. That drain to waters of the state excluding ephemeral and intermittent streams — 100 feet (Swine Bill)
 - b. That drain to ephemeral or intermittent streams — 50 feet
3. Property lines
 - a. Large facilities (420,000 or more pounds of capacity) with a capacity of
 - i. 420,000 to 840,000 pounds — 1,000 feet (Swine Bill)
 - ii. 840,000 to 1,260,000 pounds — 1,250 feet (Swine Bill)
 - iii. 1,260,000 to 1,680,000 pounds — 1,500 feet (Swine Bill)
 - iv. more than 1,680,000 pounds — 1,750 feet (Swine Bill)Note: All distances may be reduced by written waiver with the adjoining property owner after recording in the county's Office of Register of Mesne Conveyance. (Swine Bill)
 - b. Small facilities with a capacity of
 - i. 0 to 210,000 pounds — 300 feet
 - ii. 210,000 to 420,000 pounds — 600 feetNote: All distances may be reduced with permission from the adjoining property owner.
4. Waters of the state
 - a. Waters of the state excluding ephemeral and intermittent streams — 1,320 feet (may be reduced to 500 feet if concrete is used). However, if the waters are classified as Outstanding Recourse Waters (ORW) or Shellfish Harvesting Waters or the waters are the critical habitat of endangered species, then the minimum distance is 2,640 feet (may be reduced to 1,000 feet if concrete is used). In both cases, in the event of a lagoon failure, if a failed safe design is utilized to prevent swine waste from entering waters of the state (not including ephemeral and intermittent streams), the distances can be reduced to 500 feet. (Swine Bill)
 - b. Ephemeral and intermittent streams — 100 feet

Waste Utilization Areas

1. Wells
 - a. Human drinking water wells — 200 feet (Swine Bill)
 - b. Animal drinking water wells — 100 feet (per Reg. 61-71)
2. Ditches
 - a. That drain to waters of the state excluding ephemeral and intermittent streams — 100 feet (Swine Bill)
 - b. That drain to ephemeral or intermittent streams — 50 feet
3. Property lines
 - a. If the residence is within 1,000 feet of the property line — 200 feet (may be waived to 100 feet by consent of the property owner) (Swine Bill)

- b. If no residence is within 1,000 feet of the property line — none
- 4. Waters of the state
 - a. Waters of the state excluding ephemeral and intermittent streams — 100 feet (regardless of method of application) (Swine Bill)
 - b. Ephemeral and intermittent streams and the method of application is
 - i. spray irrigation — 100 feet
 - ii. incorporation — 75 feet (can be reduced to 50 feet if incorporated within 24 hours)
 - iii. injection — 50 feet

The minimum distance between a lagoon and waters of the state is 1,320 feet (1/4 mile). If the waters are designated ORW, Critical Habitat Waters, or Shellfish Harvesting Waters, the minimum distance is 2,640 feet (1/2 mile). A minimum 100-foot vegetative buffer of plants and trees is required. If a certified engineer designs a management plan to control discharge from a failed lagoon and certifies that the plan has been implemented, then the distance is 500 feet. If the lagoon is made out of concrete, the distance is 500 feet unless the waters have any of the special designations listed above, which increases the distance to 1,000 feet. The minimum distance between a lagoon and a ditch or swale that drains to state waters is 1,000 feet. No lagoon can be located in a 100-year floodplain (South Carolina Code of Laws, Title 47).

New legislation added additional siting requirements (USEPA, 1998).

Land Application Requirements

Application rates must only apply to animal feeding operations with a capacity of more than 420,000 pounds of normal production animal live weight at any one time (South Carolina Code of Laws, Title 47).

Other Requirements

An applicant proposing to construct a new or expand an existing animal growing operation is required to notify nearby property owners of the intent to construct a new agricultural facility or expand an existing agricultural facility. DHEC gives public notices of all permit issuances by placing the decision in a newspaper of general circulation in the area of the facility.

7.0 Enforcement Conditions

When a facility begins operations, it is added to the list of wastewater facilities that are inspected by the EQC District Offices under the oversight of the Bureau of Water's Compliance Division. Each of the 12 District Offices is required to perform agricultural inspections to ensure that facilities are in compliance with the requirements of their permit and agricultural waste management plan. District Offices also investigate complaints and are encouraged to work with farmers to resolve any problems at agricultural facilities. The Compliance Assurance Division provides technical assistance to farmers, as this approach is believed to increase the number of facilities that remain in compliance with their permits (DHEC, 2000f).

Agricultural facility inspections are handled in the same manner as other inspections on wastewater treatment facilities. If initial inspections reveal problems, follow-up inspections are performed. Upon completion of the inspection, farmers are provided with a copy of the inspection reports on their facilities. Presently, the Department performs about 1,500 agricultural

inspections per year (DHEC, 2000f).

The SC PCA gives DHEC authority to issue orders and administer penalties for violations of the law or permits issued under the authority of the law. Civil penalties can be up to \$10,000 per day per violation, while criminal penalties can be up to \$25,000 per day per violation and/or imprisonment up to 5 years (DHEC, 2000f).

The Bureau of Water has issued a publication entitled, *South Carolina Animal Feeding Operations Compliance and Enforcement Inspection Strategy*. This document provides an overview of the agricultural inspection and compliance programs. To request a copy, e-mail Anthony James at JAMESMA@columb32.dhec.state.sc.us (DHEC, 2000f).

South Carolina has around 1,133 active permitted agricultural facilities. Of these, there are approximately 267 swine facilities, 132 dairy and cattle facilities, 500 poultry facilities, 189 turkey facilities, and 45 facilities for various types of animal and agricultural activities (DHEC, 2000a). Maps of these permitted agricultural facilities can be found at www.state.sc.us/dhec/eqc/water/html/agpage.html.

8.0 Voluntary Programs

Like other state programs in the Southeast, South Carolina's AFO program is implemented with technical assistance by the U.S. Department of Agriculture's Natural Resources Conservation Service. State Home*A*Syst (Home Assessment System) and Farm*A*Syst (Farm Assessment System) are voluntary programs that are offered nationwide. Poultry producers may get help from the Poultry Water Quality Consortium, while the Dairy Network Partnership offers assistance to dairy producers. The Manure Management Demonstration Project emphasizes record-keeping, milking center waste disposal, and manure management. Farmers are also encouraged to seek help from the national Agriculture Compliance Assistance Center.

9.0 Additional State-Specific Information

Cooperative Extension Service

Clemson University Extension Service has a variety of programs for the agricultural community. The service provides information to the public about a number of issues, including farming and agriculture, and encourages farmers to take advantage of a variety of voluntary programs offered by the private sector. For example, John Deere sponsors a program called Managing Non-Point Source Pollution in Agriculture. More information about the extension service and its programs can be found at <http://virtual.clemson.edu/groups/extension/>.

Comprehensive Nutrient Management Plan (CNMP) Certification

South Carolina does not have a CNMP preparer certification program. A farmer must have a South Carolina-registered Professional Engineer or the U.S. Department of Agriculture-National Resources Conservation Service prepare a waste management plan for the facility. DHEC administers the NPDES program.

The South Carolina Confined Swine Feeding Operation Act (Regulation 61-43) requires swine farmers with NPDES permits to enroll in a manure manager's training program. This training program was developed and implemented in 1998 by Clemson University, in conjunction with

the South Carolina Department of Agriculture. This program was mandated by the South Carolina Confined Swine Feeding Operations Act of 1996 for owners of swine facilities. Training topics include understanding relevant regulations, issues, standards, principles, and practices regarding siting and management of an animal feeding operation and land application of animal waste; testing for toxic metals, organic materials, and other elements; using antibiotics; implementing emergency procedures; and using spill prevention protocols, which include testing and inspection of dikes (DHEC, 2000a).

Operators of swine animal feeding operations and waste utilization areas must be certified in the operation of animal waste management within 1 year after they receive the NPDES permit (DHEC, 2000a).

The education program developed by Clemson University was designed for all types of animal operations. Regulation only requires operators of swine feeding operations to enroll in the course; however, future changes in the agricultural regulations will probably make this certification mandatory for all farmers operating animal growing operations (DHEC, 2000a).

Other Information

DHEC encourages the use of innovative and alternative technologies for animal waste management to deal with the growth of human and animal populations in South Carolina. The 1998 regulations include a section that specifically addresses innovative and alternative technologies. DHEC anticipates receiving more proposals that include such technologies (DHEC, 2000c).

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South Dakota's CAFO Program

1.0 Background

Based on information provided to EPA by the U.S. Department of Agriculture (USDA), it is estimated that there are 338 AFOs with from 300 to 1,000 animal units (AUs) and 173 AFOs with more than 1,000 AUs in South Dakota. These are primarily in the swine sector (USDA, 1999; USDA, 2000).

2.0 Lead Regulatory Agency

The South Dakota Department of Environmental and Natural Resources (DENR) administers the federal point source pollution programs and the state's surface water and ground water programs. Information regarding South Dakota's Surface Water Quality and Feedlot Programs can be found at www.state.sd.us/denr/DES/Surfacewater/feedlot.htm.

3.0 State Regulations Regarding AFOs/CAFOs

South Dakota has adopted water protection legislation similar to the federal Clean Water Act. The legislation is found in South Dakota Codified Law (SDCL) Section 34A-2-1 et seq. State regulations addressing point source discharges and CAFOs are found in Sections 74:52:01:05 through 74:52:02:30. Under the authority of SDCL 1-40-38, new rules regarding inspection of feedlots became effective in February 1998 and are being implemented using SDCL 1-40-38, 34A-2-45, and 34A-2-46. These rules are found in Chapter 74:57:01, Inspections of Concentrated Animal Feeding Operations.

During the 1998 legislative session, the legislature passed two bills regarding AFOs. The first bill holds livestock owners liable for environmental pollution if they negligently entrust their livestock to someone else. The second bill established an environmental cleanup fund for spills and releases from feeding operations (USEPA, 1998).

4.0 Types of Permits

NPDES

South Dakota issues NPDES permits, referred to in South Dakota as surface water discharge (SWD) permits, to regulate discharges of pollutants to surface water. The permits cover lots of facilities that confine or feed animals 45 days or more during a 12-month period, and which do not grow crops at the facility during the growing season. CAFOs are defined in terms of the number of animal units (depending on type of animal), but South Dakota DENR may treat any facility as a CAFO if it significantly contributes to water pollution (DENR, 2000d; NASDA, 1997).

In 1997, DENR issued a state general permit for swine only. The permit includes surface water and ground water requirements. In February 1998, DENR issued a separate state permit for all other CAFOs (excluding swine operations). Like the swine permit, the CAFO permit contains requirements for surface water and ground water (DENR, 2000d). It incorporates design, storage, operational, and management requirements. Besides basic NPDES requirements for CAFOs, the general permits require mandatory producer training, inspection, ground water monitoring, and buffer zones to drainages and water sources (USEPA, 1998).

Other

Although smaller animal feeding operations that are not significant polluters of surface water are not required to obtain SWD permits, they may be required to obtain permits to discharge to ground water as part of the state's nonpoint source pollution programs. To fulfill state nonpoint source pollution program requirements, operators must seek DENR approval for installation, extension, addition, or operations of any waste disposal system or part of the system. DENR approval is also required for changes in volume or strength of discharge over an existing limit, any construction or modification of the waste disposal system that would result in a volume or discharge change, and construction or use of a new outlet for discharge into the state's water (Agena, 1994; NASDA, 1997).

Facilities seeking coverage under the general permit must also submit a nutrient management plan, operation and maintenance guidelines, and a Certification of Applicant Form (DENR, 2000e).

A Water Rights Permit is required for a private water supply if the water use by the feeding operation is more than 25,920 gallons per day or if the combined maximum pump capacity exceeds 25 gallons per minute (DENR, 2000e).

A Storm Water Construction Permit is required if 5 or more acres of land will be disturbed during construction of the animal feeding operation or the manure management system (DENR, 2000e).

5.0 Permit Coverage

Permits are required for all CAFO facilities as defined by federal regulation. Permits are not required for animal feeding operations with less than 1,000 AUs unless that facility (DENR, 2000e):

- Discharges through a man-made conveyance.
- Has water passing over, across, or through a facility.
- Has water that comes in contact with animals.
- Has continuous overflow watering or a liquid manure handling system for poultry facilities.

CAFOs that had previously obtained EPA authorization to operate under the NPDES program are considered as holding a state SWD permit.

Significant dischargers are always required to get a permit (usually an individual permit).

The two general permits are required for all new or expanding operations having more than 1,000 AUs, or where the county requires an operation to obtain coverage. Existing operations can seek coverage under the permits, but are primarily addressed on a complaint basis.

6.0 Permit Conditions

Approvals

South Dakota requires approval of construction of new confined animal feeding facilities, but requires no state operating permit (Agena, 1994).

South Dakota requires producers to submit the plan for their manure management system. The plans and specification for their system must meet DENR's design requirements and be approved by DENR's staff engineer (DENR, 2000b). If the lagoon system has not been previously approved by DENR and does not have a minimum of 180 days of manure storage and cannot contain the 25-year, 24-hour storm, additional storage will be required. Plans and specifications for the additional storage structure(s) need to be submitted to the DENR for approval and must meet the requirements of the general permit (DENR, 2000e).

Lagoon Design and Specifications

Containment structures should be constructed to store the 25-year, 24-hour storm event, plus all other process wastewater, liquid, and solid manure. The containment structures should be designed and constructed in accordance with good engineering and construction practices. The producer must incorporate the following design characteristics into the containment structure (DENR, 2000e):

- The freeboard must not be less than 2 feet for any containment structure constructed with earthen materials.
- The freeboard must not be less than 1 foot for any containment structure constructed with concrete.
- A containment structure or lagoon for an open lot may be constructed with an emergency spillway or overflow channel to remove water in a controlled manner when the capacity of the containment facility is exceeded. If present, the emergency spillway should be designed to safely pass the flow expected from at least the 25-year, 24-hour storm event.
- Uncontaminated storm water runoff should be diverted away from the containment structure whenever possible.
- If applicable, permanent markers (measuring devices) should be maintained in the containment structure to show the volume required to contain a 25-year, 24-hour rainfall event.
- Manure holding ponds, waste storage ponds, or waste storage pits or tanks must be designed based on the minimum storage time of 270 days and include all sources of manure and process wastewater that will enter the containment structure.
- Anaerobic lagoons must be designed based on volatile solids loading. The loading rate for an anaerobic lagoon must not exceed 3.0 pounds of volatile solids per 1,000 cubic feet of pond volume. Loading rates less than 3.0 pounds are allowed. The minimum depth of liquid must be 6 feet.
- Naturally aerobic lagoons must be designed based on daily biochemical oxygen demand (BOD₅) loading per acre of lagoon. The loading rate for an aerobic lagoon must not exceed 25 pounds of BOD₅ per acre of lagoon per day. Loading rates less than 25 pounds are allowed. The maximum depth of liquid is 5 feet.
- For mechanically aerated lagoons, the aeration equipment must provide a minimum of 1 pound of oxygen for each pound of BOD₅ per day. The minimum depth of liquid should be 6 feet.
- Hydraulic conductivity should be equal to or less than 1×10^{-7} centimeters per second (cm/sec) or 1/16 inch per day at maximum operating depth.

Discharge Rules

DENR directs CAFOs to have no discharges from their manure management systems. Should chronic or catastrophic storm events occur, the general permit allows an overflow or discharge

from containment structures that are designed, constructed, maintained, and operated at all times and in compliance with the terms and conditions set forth in the general permit. Should a discharge occur, the producer should keep rainfall records to document that a 25-year, 24-hour rainfall event has occurred. The producer may use an ordinary rain gauge to determine rainfall amounts (DENR, 2000e).

Waste Management Plans

The general permit requires the producer to develop, maintain, and follow a nutrient management plan to ensure safe disposal of manure and protection of surface water and ground water. The nutrient management plan should contain and address the following items (DENR, 2000e):

- General information on local requirements and whether the producer has complied with those requirements.
- The type or types of manure containment structures.
- The total number of days of storage in the manure containment structure(s).
- The method(s) of manure application.
- The maximum amount of livestock that will be confined and the average weight of the animals through the production cycle.
- An estimate of the daily and annual amount of manure produced in tons of wet manure.
- An estimate of the total nitrogen in pounds that will be available for crop production.
- The legal description of all fields to be used for land application, the crop to be planted on each field, the number of acres in each field, and whether the field is irrigated.
- A detailed map showing the outline of each field and all buffer zones and separation distances required by the permit
- A soils map for the land application fields and a description of the predominant soil type(s) for each field.
- Realistic yield goals for each field and crop listed.
- Determination of the total amount of nitrogen that can be applied to each field based on the crop planted in the field, the realistic yield goal, and any residual nitrogen left in the field from past agricultural practices or crops.
- Comparison of the total nitrogen requirement for each field to the total nitrogen available in the manure. If the nitrogen in the manure exceeds the field nitrogen requirements, the producer must identify additional land that can be used for the application of manure.
- The application rate of the manure to ensure that the nitrogen requirement of the crop(s) will not be exceeded.
- A copy of each written agreement executed with the owner of the land where manure will be applied. The written agreement must indicate the acres to which manure from the animal feeding operation may be applied and the length of the agreement. The producer should ensure that there is enough land to apply manure consistent with the approved nutrient management plan.
- Times of the year that land application is planned.

Separation Distances

Manure and wastewater containment structures should not be located within the 100-year flood plain, unless the structure is protected from inundation and the damage that may occur during flood events. The top of the lagoon or basin embankment must be constructed at least 1 foot above the elevation of the 100-year flood (DENR, 2000e).

Wastewater containment structures or the manure and wastewater disposal sites cannot be located closer than 1,000 feet from an existing public water well or drinking water source nor 250 feet from an existing private water well or drinking water source. Wastewater containment structures and the manure and wastewater disposal sites should not be located closer than 150 feet from a water well or drinking water source that is owned by the producer (DENR, 2000e).

Wastewater or manure containment structures should not be located in wetlands or over shallow aquifers (DENR, 2000e).

Land Application Requirements

Spray irrigation is allowed for land application of manure provided the producer incorporates the manure within 24 hours of application. The producer must maintain at least a 50-foot buffer zone to any natural or man-made drainage.

The producer must inject, or incorporate, any liquid manure or wastewater within 24 hours of application to nonvegetated cropland. The producer should inject, or incorporate, any solid or semisolid manure within 5 days of application to nonvegetated cropland. The producer must maintain at least a 50-foot buffer zone to any natural or man-made drainage. If the manure is surface broadcast to cropped fields, grass, alfalfa, or pasture land, incorporation is not required. However, the producer should maintain at least 200-foot-wide buffer zones between the disposal areas and any natural or man-made drainage (DENR, 2000e).

Other Requirements

South Dakota's general CAFO permits require mandatory producer training and ground water monitoring. By January 1, 1999, a producer that had obtained coverage under the general permit must have submitted verification that the producer had taken an environmental training course pertaining to proper operation and maintenance of a manure management system and proper natural resource management. After January 1, 1999, any producer that is required to obtain coverage under the general permit must submit verification before the DENR secretary will issue a certificate of compliance (DENR, 2000e).

Legislation enacted in 1997 established an annual fee for all regulated CAFOs, authorized additional permitting requirements for CAFOs locating over shallow aquifers, and strengthened the state's existing "bad actor" law (USEPA, 1998).

The Operator Water and Wastewater Certification Program is intended to protect public health, environmental quality, and water/wastewater systems' investment in their facilities. A voluntary certification program was started in 1954. The mandatory certification law was passed by the South Dakota State Legislature in 1970. There are certifications in water treatment, water distribution, wastewater treatment, wastewater collection, stabilization ponds, and small water treatment systems (DENR, 2000f).

7.0 Enforcement Information

General Enforcement Information

Enforcement tools that may be used by the DENR secretary, as appropriate, include warning letters, notices of violations, orders, and civil and criminal penalties, as stated in SDCL

74:57:01:09. In accordance with SDCL 74:57:01:10, the secretary may also suspend, modify, or revoke a permit for a violation (LRC, 2000). Additionally, violations of the state permit may result in civil and criminal fines, incarceration, civil suits, and revocation, suspension, or modification of the permit (NASDA, 1997). Criminal and civil penalties may not exceed \$10,000 per day of violation. Violators are also responsible for the costs of cleaning up or repairing environmental damage. Permit violators may have to pay the legal costs of enforcement. These penalties apply to people who make false statements or certifications or who tamper with monitoring equipment (Copeland et al., 1997).

General Inspection Information

Before 1998, South Dakota did not regularly inspect CAFOs, regardless of size. CAFOs were inspected only following a complaint. Before small feeding operations could apply for a permit, an on-site inspection had to be conducted to determine whether the operation should be regulated (NASDA, 1997). New feedlot inspection rules became effective on February 1, 1998 (DENR, 2000b).

Compliance inspections must be conducted annually for facilities with over 2,000 AUs and once every 3 years for all other CAFOs. Construction inspections are also conducted, and complaint inspections will continue as needed (USEPA, 1998). Highlights of the new inspection rules are as follows (LRC, 1998):

- During construction, DENR's secretary must be notified 30 days before placing animals in the facility. The secretary will inspect the facility within the 30-day period. No animals can be placed in the facility before the inspection is conducted.
- CAFOs with at least 2,000 AUs that are required to operate under a general or an individual permit will be inspected at least annually.
- Regardless of size, all CAFOs required to operate under a general or an individual permit will be inspected at least once every 3 years of operation. New AFOs will be inspected within the first 18 months of operation.
- At facility closure, AFOs will be inspected before terminating coverage of a permit.
- All permit applications contain a notarized statement by the owner or operator granting permission to the secretary for performance of the inspections.

8.0 Voluntary Programs

DENR, with a grant from EPA, has developed a program to provide on-site assistance to wastewater operators. This program targets facilities that are having difficulty meeting their Surface Water Discharge permit requirements or new operators that need hands-on assistance (DENR, 2000f).

9.0 Additional State-Specific Information

Cooperative Extension Service

Information regarding the South Dakota State University Cooperative Extension Service can be found at www.abs.sdstate.edu/CES/index2.htm.

Comprehensive Nutrient Management Plan (CNMP) Certification

South Dakota does not have a CNMP preparer certification program.

10.0 References

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Tennessee's CAFO Program

1.0 Background

Tennessee's current strategy for CAFOs establishes a two-tiered permit system based on the size of the operation and the type of waste management system in place. The permit system is designed to prevent impacts from CAFOs on water quality. Tennessee enacted this strategy, even though the state has few CAFOs, to prevent the problems seen in other states such as North Carolina (TDEC, 2000c).

Based upon information provided to EPA by USDA it is estimated that there are 323 AFOs with from 300 to 1,000 animal units and 111 AFOs with more than 1,000 animal units in Tennessee. These are primarily in the broiler sector (USDA, 1999; USDA, 2000).

2.0 Lead Regulatory Agency

CAFO permits are issued by the Tennessee Department of Environment and Conservation (TDEC) Division of Water Pollution Control (WPC). TDEC and WPC information can be found at www.state.tn.us/environment/ and www.state.tn.us/environment/wpc/index.html, respectively.

3.0 State Regulations Regarding AFOs/CAFOs

The Tennessee CAFO General Permit is implemented under the authority of the Tennessee Water Quality Control Act of 1977, Chapter 1200-4-10 of the Rules of the TDEC, and the NPDES program delegation from the U.S. Environmental Protection Agency (TDEC, 1999b).

4.0 Types of Permits

NPDES

Tennessee is authorized to administer the NPDES permit program. The Class II Concentrated Animal Feeding Operations General Permit, which was implemented under the authority of the Tennessee Water Quality Control Act, became effective on May 1, 1999, and will expire on April 30, 2004. The Class II permit is for medium-sized operations and poultry farms that use dry manure waste systems. The issuance of Class II permits is also dependent on the existing agricultural impacts on streams. TDEC began issuing Class I Concentrated Animal Feeding Operations Individual Permits for the largest livestock operations with more than 1,000 animal units (AUs). Operators have until May 1, 2001, to comply with the new standards (TDEC, 1999b).

Other

There are no state standards regarding site appraisal and no state standards regarding separation distance, liner material, or seepage (NASDA, 1997).

5.0 Permit Coverage

Tennessee generally follows the federal definition of CAFOs. Under the Tennessee strategy, individual permits are used for operations meeting the NPDES threshold of 1,000 AUs, and a general permit is used for operations with 301 to 1,000 AUs (TDEC, 1999b). The Class II

general permit applies to all new animal feeding operations with 301 to 1,000 AUs and the existing operations with a single type of animal located in the watersheds of impacted stream segments resulting from livestock operations (specifically identified in Tennessee's 303(d) list of impaired waters). The animal types are as follows:

	Class I	Class II	
Animal Type	Liquid Manure Management	Liquid Manure Management	Dry Manure Management
Poultry (broilers and/or laying hens)	≥ 30,001	9,000 – 30,000 birds	≥ 50,000 birds (existing operations), ≥ 20,000 (new operations)
Swine	≥ 2,501 over 55 pounds each	751 – 2,500 over 55 pounds each	751 – 2,500 over 55 pounds each
Dairy (mature animals)	≥ 701	201 – 700	20 – 700
Slaughter or feeder cattle	≥ 1,001	301 – 1,000	301 – 1,000
Other commercial species	n/a	See 40 CFR Part 122, Appendix B	See 40 CFR Part 122, Appendix B

Source: TDEC, 1999b.

When medium-sized operations confine more than one kind of animal and are located in 303(d) listed waters identified as impacted because of livestock operations, they must use the animal unit conversion factor in 40 CFR Part 122, Appendix B, to determine whether they qualify for the Class II general permit. To qualify for the permit, the total AUs for the combination of animals must be 301 to 1,000 AUs (TDEC, 1999b).

TDEC may designate any AFO with fewer than 301 animals as a Class II CAFO if the department determines that the operation contributes pollution to Tennessee waters. Also, if the operator requests it, TDEC can designate a smaller AFO as a Class II CAFO (TDEC, 1999b).

6.0 Permit Conditions

Approvals

There are no required approvals (NASDA, 1997).

Lagoon Design and Specifications

The general permit requires that liquid animal waste treatment and/or storage systems or expansions to existing facilities must be designed by a registered Professional Engineer licensed to practice in Tennessee by the State Board of Agricultural and Engineering Examiners, or by a person with engineering approval authority from the Natural Resources Conservation Service (NRCS). Dry manure management systems that exceed 5 days of unprotected exposure of waste will be considered liquid waste management systems and may require an individual NPDES permit. Liquid waste handling facilities must be designed, constructed, and operated to contain all process-generated waste plus the runoff from a 25-year, 24-hour rainfall event (TDEC,

1999b).

Discharge Rules

There are no specific state standards other than no discharge is allowed except during a 25-year, 24-hour storm event (NASDA, 1997). If there is a discharge following a 25-year, 24-hour storm or an unpermitted discharge, then samples must be collected and analyzed for fecal coliform, 5-day biological oxygen demand (BOD₅), total suspended solids (TSS), total nitrogen, total phosphorus, copper, zinc, and any other pesticides or pollutants the operator believes could be present (TDEC, 1999b).

Waste Management Plans

Nutrient management plans (NMPs) are required as a condition of the permits. The NMP must contain the following (TDEC, 1999b):

- Aerial photographs and maps
- Current and planned plant production sequence and rotation
- Identification of non-application buffer strips around the application site(s)
- Soil test results for the phosphorus and potassium for application sites
- Nutrient budget (N, P, K) based on realistic yields and all sources
- Calculated agronomic rate
- Proposed application method and schedule

Separation Distances

For new operations, the general permit requires that setbacks be consistent with guidelines found in the NRCS Field Office Technical Guide (TDEC, 1999b). There are no state standards on separation distances (NASDA, 1997).

Land Application Requirements

Land application must be in accordance with the approved NMP, the Clean Water Act (CWA), and its implementing regulations (TDEC, 1999b). There are no state standards (NASDA, 1997).

Other Requirements

Under non-emergency conditions, CAFOs should dispose of dead animals by composting, rendering, incineration, disposal in a Class I permitted landfill, or burial on-site in accordance with the approved NMP (TDEC, 1999b).

Records must be kept on-site for a minimum of 2 years (TDEC, 1999b).

7.0 Enforcement Information

The Tennessee AFO Strategy does include annual inspections of large (Class I) facilities with individual permits and inspection of other facilities based on complaints and availability of staff.

Number of CAFO Facilities

As of July 2000, WPC issued permits to 39 Class II CAFOs. Permits for five additional facilities and eight Class I operations were to be issued by the end of July 2000 (TDEC, 2000c).

8.0 Voluntary Programs

Education, training, and technical assistance programs are available through NRCS, Tennessee Department of Agriculture (TDA), and University of Tennessee (UT) Extension (NASDA, 1997). UT Extension and NRCS will be available to assist producers with the new permitting requirements. Coordination between TDEC and TDA is via a Memorandum of Understanding.

TDA reviews and approves all nutrient management plans and waste handling systems required under the general Class II permit (TDEC, 1999b). All notices of intent (NOIs) for the general permit must be submitted to TDA. The state anticipates that the CWA Section 319 NPS program will become involved in the regulation of animal feeding operations.

Cost-share funding is offered as an incentive for good agricultural practices (NASDA, 1997). TDA offers state cost-share programs to point source and nuisance problems (USEPA, 1998).

9.0 Additional State-Specific Information

Cooperative Extension Service

The University of Tennessee Agricultural Extension Service provides information to the public about a number of topics, including agriculture and animal science. Specific information about manure management and water quality in relation to dairy, swine, poultry, and beef is provided through the Animal Science Department. Operators may contact the Beef-Sheep-Horse Extension, Dairy Extension, Poultry Extension, or the Swine Extension concerning a variety of animal-related issues including waste management. More information about the extension service and its programs can be found at www.utextension.utk.edu/.

Comprehensive Nutrient Management Plan (CNMP) Certification

Tennessee does not have a CNMP preparer certification program. Tennessee does, however, require Class I CAFO permits for liquid manure management systems to have a waste management system plan prepared by a licensed Professional Engineer or a person with USDA-NRCS approval authority. The waste management plan must be approved by TDA before submittal to TDEC. Nutrient management plans are also required for Class I CAFO permits. These plans must be consistent with the USDA-NRCS Field Office Technical Guide and be approved by TDA (TDEC, 1998).

Other Information

Some communities in Tennessee have taken action to prevent CAFOs from locating near them because of concerns about odor and large amounts of animal waste. The Rutherford County Commission voted to alter their zoning regulations to require a conditional use permit for CAFOs. Although no CAFOs have expressed interest in locating in Rutherford County, local officials wanted to be prepared should such a situation arise (TDEC, 2000c).

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Texas's CAFO Program

1.0 Background

On September 14, 1998, EPA Region 6 approved the Texas Pollutant Discharge Elimination System (TPDES) Program pursuant to Section 402 of the Clean Water Act. As of that date, the Texas Natural Resource Conservation Commission (TNRCC) administers their TPDES program and EPA ceased new permitting actions under the NPDES program. The TPDES program includes the regulation of wastewater and storm water point source discharges; the industrial pretreatment program; and sewage sludge disposal. NPDES permits under TNRCC's jurisdiction will become state-administered TPDES permits and will be reissued (upon expiration) or modified by the state agency (EPA Region 6, 2000a).

TNRCC has assumed administration of the expired EPA Region 6 CAFO general permit. However, because this is an expired permit, no new notices of intent (NOIs) will be approved. Those who submitted NOIs to EPA after the general permit expired stay under the jurisdiction of EPA until they apply for and receive TPDES coverage through TNRCC (TNRCC, January 1999b).

Based upon information provided to EPA by USDA it is estimated that there are 917 AFOs with from 300 to 1,000 animal units and 679 AFOs with more than 1,000 animal units in Texas (USDA, 1999; USDA, 2000).

2.0 Lead Regulatory Agency

TNRCC Water Permits and Resource Management issues wastewater permits under the TPDES program and oversees the CAFO permit program. Their homepage is found at www.tnrcc.state.tx.us/permitting/waterperm/wwperm/tpdes.html.

3.0 State Regulations Regarding AFOs/CAFOs

Texas Administrative Code, Title 30 (Environmental Quality), Part 1 (TNRCC), Chapter 321 (Control of Certain Activities by Rule), Subchapter B (CAFOs), includes applications for both air and water quality. These rules require all CAFO operators to collect, store, and handle animal wastes and control dust and odor. The regulation is located at [http://info.sos.state.tx.us/pub/plsql/readtac\\$ext.ViewTAC?tac_view=5&ti=30&pt=1&ch=321&sch=B&rl=Y](http://info.sos.state.tx.us/pub/plsql/readtac$ext.ViewTAC?tac_view=5&ti=30&pt=1&ch=321&sch=B&rl=Y).

4.0 Types of Permits

Permittees do not have to apply for separate federal and state CAFO authorizations. Texas is authorized to issue a single permit that will meet both state and federal standards (TNRCC, January 1999b).

NPDES

NPDES permits under TNRCC's jurisdiction will become state-administered TPDES permits and will be reissued (upon expiration) or modified by the state agency (EPA Region 6, 2000a).

Other

TNRCC runs the Dairy Outreach Program, which targets eight counties that have been identified as having water quality problems related to nonpoint pollution from CAFOs. All dairies must register with the state and can enroll in the outreach program if their county participates in the program. Erath, Bosque, Hamilton, Comanche, Johnson, Hopkins, Wood, and Rains are the participating counties. If a new facility in one of these counties would exceed 300 animal units, then the operator must file an application for written authorization for the dairy; complete an 8-hour course on animal waste management within 12 months of beginning the operation; and complete an additional 8 hours of training every 24 months after the initial training (TNRCC, 2000b).

5.0 Permit Coverage

Animal feeding operations that confine and feed more than 1,000 animal units (AUs) for 45 days or more in a 12-month period must apply. Also, facilities that confine and feed more than 300 AUs and discharge pollutants into surface waters either through a man-made ditch or flushing system must apply (TNRCC, 2000b).

Facilities with more than 300 AUs located within the TNRCC Dairy Outreach Program Area are still required to obtain written state authorization, even though TPDES authorization may not be required. These facilities do not need TPDES permits unless they are notified by TNRCC. All other animal feeding operations must comply with the state requirements found in 30 Texas Administrative Code (TAC) Chapter 321, Subchapter B (TNRCC, 2000b).

6.0 Permit Conditions

A pollution prevention plan (PPP) must be prepared for every CAFO facility authorized to operate under Subchapter B. At a minimum the PPP must include the information required in 30 TAC, Sections 321.191–194. The PPP describes the practices necessary to keep the facility in compliance with Subchapter B regulations.

The requirements and best management practices of the PPP are detailed below and summarized at (TNRCC, 2000a): www.tnrcc.state.tx.us/permitting/waterperm/wwperm/ag/agppp.html.

Approvals

Recharge Feature Certification:

- Investigation of the site to certify
- Lack of recharge features
- Location of recharge features with a plan to prevent impacts on ground water
- Certification of the recharge feature by a licensed Professional Engineer and NRCS engineer, or a qualified ground water scientist

Retention Facility Embankments:

- Must be free of foreign material (e.g., trash, brush, or trees)
- Must be constructed in 6-inch lifts and compacted at optimum moisture
- Document variations by a Professional Engineer, a certified compaction test, or a certification that they are in accordance with NRCS specifications
- Stabilize walls to prevent erosion or deterioration

Lagoon Design and Specifications

Based on the 25-year, 24-hour rainfall event, the following volumes must be designed for:

Retention Facility Design:

- Manure-contaminated runoff from open lot surfaces and manure storage
- Runoff from areas between open lot surfaces and retention facilities
- Rainfall multiplied by the area of the retention facilities and waste basin
- Rainfall from any roofed area that is directed into the retention facilities
- All waste and process-generated wastewater produced during a 21-day or greater period
- A minimum storage for 1 year of sludge accumulation
- Storage for all wastewater and runoff during periods of low crop demand (as determined by the water balance)
- Minimum treatment lagoon volume (if air permit required)
- Any additional storage determined by the system designer

A log of the specific measurements of wastewater levels in each terminal retention facility is conducted and recorded weekly. Dewatering equipment must be available to restore freeboard for 25-year, 24-hour rainfall and accumulated wastes and wastewater.

The permanent marker should be visible from the top of the levee, have scaled measurements for 25-year, 24-hour rainfall and (applicable) treatment volume, and be located in all terminal (applicable) treatment retention facilities.

The rain gauge should be kept on-site and maintained along with a log of measurable rainfall.

Retention Facility Construction:

- Existing facilities should be properly maintained and show no signs of leakage.
- New facilities should be designed, constructed, and maintained in accordance with good engineering practices and in accordance with NRCS technical standards.

Prevention of Hydrologic Connection:

- Retention facilities have in-situ materials composed of a minimum of 1.5 feet of earthen material having 1×10^{-7} cm/sec hydraulic conductivity, or
- Retention facilities are lined in accordance with Appendix 10d of the Agriculture Waste Management Handbook, or
- The liner must be constructed to have hydraulic conductivities no greater than 1×10^{-7} cm/sec with a thickness of 1.5 feet or greater or its equivalency in other materials.
- The liner must be tested and certified by a licensed Professional Engineer or a qualified ground water scientist (TNRCC, 2000).

Discharge Rules

Facilities cannot discharge other than during the 25-year, 24-hour storm event. Waste structures should be designed to contain wastes during the 25-year, 24-hour storm event, but discharges that occur when catastrophic rainfall events exceed the capacity of the structure are allowed (NASDA, 1997).

Waste Management Plans

A PPP must be developed for each CAFO covered under Subchapter B. The PPP must describe the operator's implementation of practices that will ensure compliance with limitations and conditions of Subchapter B. A PPP may refer to the facility's NRCS waste management plan (WMP) when the WMP contains equivalent PPP requirements. The WMP should be included in the PPP. The PPP must be amended prior to any change in design, construction, operation, or maintenance if any change significantly affects the potential for discharge of pollutants into the waters of the state or nuisance conditions (TNRCC, 2000a).

Separation Distances

The separation distance from dwellings is ½ mile for new CAFOs with more than 1,000 AUs and 1/4 mile from property lines if land application is during the nighttime hours. Distance from private water wells is 150 feet, and distance from municipal wells near the land application sites is 500 feet. Distance from ground water is determined by prevention of hydrological connection as per site design. Ground water requirements include certification of absence or presence of recharge features with a plan to prevent impacts (NASDA, 1997).

Land Application Requirements

Wastewater Removal and Land Application—The calculations and factors used in determining land application rates, acreage, and crops must be documented. Wastewater must be land applied according to the following:

- Prohibit discharge of irrigated wastewater into or adjacent to waters of the state.
- Base application rates on the nitrogen content of the wastewater and the nitrogen requirement of the crop grown unless local water quality is threatened by phosphorus; then base application rates on phosphorus.
- Ensure that irrigation does not occur on frozen or saturated soils or during rainfall.
- Reduce or minimize ponding and puddling of irrigated wastewater.
- If a properly operated facility is in danger of imminent overflow, because of chronic or catastrophic rainfall, discharge wastewater onto land application sites for filtering prior to discharging into waters of the state.
- Properly maintain all ponds, pipes, ditches, pumps, diversions, and irrigation equipment.
- Make available adequate land and equipment to maintain the retention capacity.
- Where land application sites are isolated from surface waters and ground waters and no potential exists for runoff to reach any waters in the state, application rates may exceed nutrient crop uptake rates but only upon written TNRCC approval and without cause or contribution to a violation of water quality standards or creation of a nuisance.

Manure and Pond Solids Handling and Land Application—Storage and land application of manure must not cause a discharge of pollutants, a water quality violation to waters of the state, or a nuisance condition. When manure is applied on land owned or operated by the facility, document the following:

- Waste handling procedures and equipment availability
- Land application rate calculations and assumptions
- Nutrient analysis data

Proper Manure Handling—Manure sold or given away (not including incidental amounts) must be recorded in a log that includes removal date, hauler's name, and amount hauled. Nutrient analysis of the manure must be available to the hauler. Proper manure handling includes the following activities (TNRCC, 2000):

- Maintain an adequate manure storage area.
- Do not store or dispose of manure in the 100-year floodplain, near water courses, or in recharge zones unless stockpiles are protected with adequate berms and land applied manure is distributed at agronomic rates.
- Ensure that stockpiled manure is steep-sloped and stored in well-drained areas without ponding of water, and that all manure-contaminated runoff is retained on-site.
- Do not apply manure on soils frozen or saturated or during rainfall.
- Apply manure on suitable land at appropriate times, at agronomic rates, and in response to crop needs, and prohibit manure runoff while considering expected precipitation and soil conditions.
- Document practices used to minimize manure transport to water courses (e.g., discing, terracing, vegetative filter strips, tail water pits, etc.).
- Use edge-of-field grassed strips to separate water courses from runoff carrying eroded soil and manure. Avoid land subject to excessive erosion.
- Where land application sites are isolated from surface waters and ground waters and no potential exists for runoff to reach any waters in the state, be aware that application rates may exceed nutrient crop uptake rates but only upon written TNRCC approval and without cause or contribution to a violation of water quality standards or creation of a nuisance.
- Scrape and/or flush wastes from lanes, pens, floors, and the like weekly.
- Design and maintain pens to ensure good drainage.
- Clean out solids-settling basins often to maintain working efficiency.

7.0 Enforcement Information

Civil penalties not to exceed \$25,000 per day of the violation may be imposed. Violators may also be sentenced to imprisonment for up to 1 year (NASDA, 1997).

Inspection Programs

The general permit requires that the permittee perform a complete inspection of the facility and prepare a report at least once a year. The parties responsible for inspection of CAFOs must be named in the PPP. Inspection documents should be kept on-site for at least 3 years. Also, farms that are within the Dairy Outreach Program Areas (which consists of eight counties in the Upper North Bosque River watershed) must undergo annual inspections (USEPA, 1998).

Permittees will be selected for routine compliance inspections based on risk factors. TNRCC will continue to provide advance notification to permittees before routine compliance inspections and will advise permittees in writing of the findings of the inspections. Appropriate action will be taken to ensure that permittees address violations documented during inspections (TNRCC, 1998).

Complaint investigations result in about 20 percent of all facilities being inspected annually (USEPA, 1998). Routine on-site inspections are required (NASDA, 1997).

8.0 Voluntary Programs

TNRCC's Agriculture Team helps CAFO operators select, implement, and use the best technologies for handling animal wastes. The Team also participates in the 319(h) Nonpoint Source Grant Program. Small non-permitted AFOs are generally the responsibility of the Texas State Soil and Water Conservation Commission (since 1993). The Commission assists operators of small CAFOs with technical issues and requires them to come into compliance with the CAFO rules as expeditiously as possible without requiring a permit (Texas Center for Policy Studies, 1995).

Austin and San Antonio have Local Pollution Abatement Programs that limit impervious cover and expand zoning authority (Texas Center for Policy Studies, 1995).

9.0 Additional State-Specific Information

Cooperative Extension Service

Information regarding the Texas A&M University Agricultural Extension Service is available at <http://agextension.tamu.edu/>.

Comprehensive Nutrient Management Plan (CNMP) Certification

Texas does not have a CNMP preparer certification program. TAC Title 30, Chapter 321, Subchapter B, requires that operators of facilities with more than 1,000 animal units (AUs) located inside TNRCC Dairy Outreach Program Areas (DOPAs) complete an education and training requirement. In addition, facilities in the DOPA with greater than 700 AUs will be issued a TPDES authorization, and facilities with between 300 and 700 AUs will be issued only a state authorization (Sections 321.33 and 321.41).

The training program requires owners, operators, or designees to complete an 8-hour course on animal waste management within 12 months after beginning the operation. Operators must take an addition 8 hours of animal waste management training every 2 years and conduct a third-party audit every 5 years (Section 321.41).

Employees of operations that work in activities that are related to compliance of Subchapter B provisions must be regularly trained or informed of any information pertinent to the proper operation and maintenance of the facility and land application of waste.

Case Studies/Innovative Programs

The TNRCC established a DOPA in the Upper North Bosque River watershed. This watershed has been impacted by CAFO-related activities. All facilities within the DOPA are inspected annually. Also, a state permit is required for any facility with more than 300 AUs located in the DOPA, as compared to 1,000 AUs outside of DOPA (USEPA, 1998).

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Utah's CAFO Program

1.0 Background

Based on information provided to EPA by USDA, it is estimated that there are 160 AFOs with 300 to 1,000 animal units and 55 AFOs with more than 1,000 animal units in Utah. These are primarily in the dairy sector (USDA, 1999; USDA, 2000).

2.0 Lead Regulatory Agency

The lead regulatory agency for CAFOs in Utah is the Utah Department of Environmental Quality, Division of Water Quality. The CAFO program in Utah is administered by two agencies, the Utah Department of Environmental Quality (DEQ) and the Utah Water Quality Board (NASDA, 1997).

3.0 State Regulations Regarding AFO/CAFOs

The state of Utah defines CAFOs according to Utah Admin. R. R317-8-3.5. Utah has authority to issue discharge permits to CAFOs under Utah Code Ann. §19-5-101 et seq. (The Utah Water Quality Act is similar to the federal Clean Water Act.)

4.0 Types of Permits

NPDES

Utah is authorized to administer the federal NPDES program (NASDA, 1997). The state's NPDES CAFO regulations are consistent with existing federal regulations. State regulations provide for the use of the EPA feedlot effluent guideline or best professional judgement (or a combination) as effluent standards applicable to CAFOs (Utah Admin. R. R317-8-7.1(3)). In the past, some facilities were covered under general or individual permits, but Utah allowed the permits to lapse once a facility had achieved containment of storm water (zero discharge status). Utah does not require large corporate hog farms to seek coverage under NPDES permits because these facilities are all indoors. Utah's general CAFO permit went into effect on October 1, 2000 and apparently expires on September 30, 2005. The 5-year NPDES permit must be obtained from the Utah Water Quality Board (NASDA, 1997).

Other

The state issues ground water permits to many CAFOs and AFOs that have animal waste lagoons, including large corporate hog operations and many dairy operations (USEPA, 1998). Under state regulations, no person may construct, install, or operate any new facility or modify an existing or new facility, not permitted by rule, which discharges or would probably result in a discharge of pollutants that may move into ground water including, but not limited to land application of wastes, waste storage pits, waste storage piles, large feedlots, and other specified activities — without a ground water discharge permit from the Executive Secretary (Utah Admin. R. R317-6-6.1). State regulations also provide that the following operations are permitted by rule:

- The land application of livestock wastes, within expected crop nitrogen uptake, which is permitted by rule for purposes of state ground water permit requirements.

- Animal feeding operations, as defined in UAC R317-8-3.5(2), that are not located within Zone 1 (100 feet) for wells in a confined aquifer or Zone 2 (250-day time of travel) for wells and springs in unconfined aquifers, in accordance with the Public Drinking Water Rule R309-113, and that meet either of the following criteria:
 - Operations that incorporate low-volume liquid waste handling systems of less than 4 million gallons capacity, or
 - Operations with fewer than the following numbers of animals confined:
1,000 slaughter and feeder cattle; 700 mature dairy cattle, whether milked or dry cows; 2,500 swine each weighing more than 25 kilograms (approximately 55 pounds), for facilities without animal waste collection and treatment systems approved by the Executive Secretary; 1,000,000 pounds steady-state live animal weight of swine for facilities with animal waste collection and treatment systems for which a construction permit has been issued by the Executive Secretary; 500 horses; 10,000 sheep or lambs; 55,000 turkeys; 100,000 laying hens or broilers, if the facility has continuous overflow watering; 30,000 hens or broilers, if the facility has a liquid manure handling system; 5,000 ducks; or 1,000 animal units.
- Animal feeding operations that do not use liquid waste handling systems.

The Executive Secretary may require the submission of an application for a ground water discharge permit for any discharge permitted by rule under R317-6-6.2 if it is determined that the discharge may be causing or is likely to cause increases above the ground water quality standards or applicable class TDS limits under R317-6-3 or otherwise is interfering or may interfere with probable future beneficial use of the ground water.

No facility permitted by rule under R317- 6-6.2.A may cause ground water to exceed ground water quality standards or the applicable class TDS limits in R317-6-3.1 to R317- 6-3.7. If the background concentration for affected ground water exceeds the ground water quality standard, the facility may not cause an increase over background.

In addition, no person may construct a device for the treatment or discharge of wastewater without first receiving a permit to do so from the Water Quality Board or its authorized representative, except as provided in R317-1-2.5. Construction permits expire 1 year after the date of issuance unless substantial and continuous construction is under way. Upon application, construction permits may be extended on an individual basis if application for the extension is made before the permit expiration date. (Utah Admin. R. R317-1-2).

Construction plans and specifications for small animal waste lagoons as defined in R317-6 (permitted by rule for ground water permits) need not be submitted to the Division if the design is prepared or certified by the USDA Natural Resources Conservation Service (NRCS) in accordance with criteria provided for in the Memorandum of Agreement between the Division and the NRCS, and if the NRCS inspects the construction. Compliance with these rules is determined by on-site inspection by the NRCS. NRCS approval applies to lagoons located outside public drinking water source zone 1 or 2 (R309-113) with less than 4 million gallons operating capacity or fewer than 1,000 animal units.

5.0 Permit Coverage

The UPDES permit applies to any person or company that discharges pollutants from a point source to state waters (including underground water). CAFOs are defined as point sources, consistent with federal criteria. The state's list of regulated pollutants includes "agricultural wastes discharged into water."

6.0 Permit Conditions

Approvals

No information was found in publically available sources.

Lagoon Design and Specifications

Ground water permits detail seepage limits and construction quality control requirements for lagoon liners (USEPA, 1998). Construction permits also include lagoon design specifications.

Discharge Rules

Individual ground water permits may be issued where the applicant demonstrates that the applicable class TDS limits, ground water quality standard protection levels, and permit limits established under R317-6-6.4E will be met; the applicant is using best available technology to minimize the discharge of any pollutant; and there is no impairment of present and future beneficial uses of the ground water (Utah Admin. R. R317-6-6.4). These permits can include monitoring requirements and require corrective action for violations.

Waste Management Plans

Ground water permits require nutrient management plans if land application is involved (USEPA, 1998).

Separation Distances

Utah does not have odor requirements (USEPA, 1998). Land application must be 50 feet from private wells, and lagoon impoundments must be 500 feet from water wells (Preliminary NSCL data, June 2000).

Land Application Requirements

The land application of livestock wastes, within expected crop nitrogen uptake, is permitted by rule for purposes of state ground water permit requirements. Smaller facilities that do not have a construction permit must have a waste management plan designed by NRCS. Under this plan, field application of livestock waste must balance nutrient application with soil and plant nutrient uptake rates.

Under the state AFO Strategy, comprehensive nutrient management plans (CNMPs) must be reviewed and approved by certified persons.

7.0 Enforcement Information

UPDES permits may be revoked, modified, or suspended for violation of the permit conditions, obtaining the permit through misrepresentation, or changes in conditions that require reduction or elimination of the permitted discharge (NASDA, 1997).

All ground water permitted facilities are inspected at least annually; if ground water monitoring is involved, the inspection also includes sampling (USEPA, 1998).

8.0 Voluntary Programs

Utah CAFO operators may go to the Utah State University Extension Service, Utah Department of Agriculture (UTDA), and Department of Environmental Quality for information about waste management and the environment. In addition, the extension service offers publications through its World Wide Web site, which includes several fact sheets on managing small farms (poultry, sheep, pig, etc.). Utah farmers are eligible to receive help from the regional Western Integrated Ranch/Farm Education (W.I.R.E.) program.

9.0 Additional State-Specific Information

Cooperative Extension Service

The Extension Water Quality Program at Utah State University offers up-to-date, unbiased, research-based information and assistance to Utah citizens about the quality of surface and ground water, best management practices to reduce water pollution, and the function and protection of watersheds. Information about the extension can be found at www.ext.usu.edu/natres/index.htm.

Comprehensive Nutrient Management Plan (CNMP) Certification

Utah does not have a CNMP preparer certification program. CAFOs with more than 1,000 animal units and designated CAFOs are required to have a CNMP.

In 1999, the Utah Department of Agriculture published a response to the 1999 USDA-EPA Unified National Strategy for AFOs. During 2000 Utah will determine the number and location of AFOs and CAFOs. The state DEQ, Division of Water Quality, will then develop a general permit covering all CAFOs with 1,000 animal units or greater. The state intends to provide a 5-year period during which producers may make voluntary improvements, which may allow CAFOs with fewer than 1,000 animal units to return to AFO status. Permitting on CAFOs will begin in 2000, with the initial focus on CAFOs in priority watersheds. Technical and financial assistance will be provided to assist operators in improving facilities and developing CNMPs. CNMPs must be reviewed and approved by certified persons (UTDA, 2000).

Memorandum of Agreement (MOA)

Utah DEQ and USDA NRCS entered a Memorandum of Agreement regarding requirements applicable to small animal waste manure lagoons (April 1995).

Other Information

In 1998 approximately 1.5 FTEs were spent on CAFO regulation (USEPA, 1998). Funding is targeted to high-priority impaired watersheds. If CAFOs are a major source of impairment, considerable funding will be directed at that source. This funding includes section 319 and EQIP money, as well as a few other funding sources (USEPA, 1998).

Circle Four, the nation's 20th largest hog company, has met resistance and criticism from local citizens (including Citizens for Responsible and Sustainable Agriculture, or CRSA) since it began operating in southwestern Utah in 1995, but it has continued to publicize its ambition to become the nation's largest hog farm (Circle Four Farms, 1999; Marks and Knuffke, 1998). In 1998 Circle Four had 260,000 hogs on-site and generated about 600,000 market hogs per year.

There are worries that Circle Four cannot contain its hog waste. Circle Four was issued a ground water permit (the primary type of permit Utah offers CAFOs). At least once Circle Four did not meet its monitoring requirements, and there were suspicions that the plastic lagoon liners Circle Four uses might have been failing. CRSA appealed Circle Four's permits in fall 1997. Circle Four continued to expand in 1998, awaiting a decision on the appeal. In fall 1998, the Utah Water Quality Board prompted DWQ, Circle Four, and CRSA to begin a series of meetings. [NRDC (1998) wrote a more detailed case study highlighting the pollution and regulatory issues surrounding Circle Four's operation in Utah.]

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Vermont's CAFO Program

1.0 Background

Based upon information provided to EPA by USDA it is estimated that there are 140 AFOs with from 300 to 1,000 animal units and 15 AFOs with more than 1,000 animal units in Vermont. These are primarily in the dairy livestock sector (USDA, 1999; USDA, 2000).

The Vermont Department of Agriculture is working with the Vermont Department of Environmental Conservation to develop a CAFO program based on federal CAFO requirements and new state legislation (Voorhees, 1997). The state intends to work with EPA to develop a CAFO program (USEPA, 1998).

2.0 Lead Regulatory Agency

The Vermont Department of Environmental Conservation (DEC), under the Agency of Natural Resources, is authorized to administer the federal NPDES program (Voorhees, 1997). The Vermont Department of Agriculture, Foods, and Markets (VDAFM) administers the Large Farm Operations (LFO) Rules. Information about DEC, the Agency of Natural Resources, and VDAFM can be found at www.anr.state.vt.us/dec/dec.htm, www.anr.state.vt.us/ and www.state.vt.us/agric/index.htm, respectively.

3.0 State Regulations Regarding AFOs/CAFOs

The state of Vermont passed the Large Farm Operation (LFO) Rules, effective November 23, 1999. These rules establish procedures and standards for the preparation and review of LFO permit applications, as well as the issuance of permits for the operation and expansion of large farms and/or the construction of new buildings for LFOs in the state of Vermont (VDAFM, n.d.). Specific language from the LFO Rules can be found at www.state.vt.us/agric/lforules.htm.

CAFOs are also impacted by performance-based accepted agricultural practices (AAPs), adopted as Title 6, Chapter 215, under Vermont's agricultural nonpoint source pollution reduction program. Specific language from Title 6, Chapter 215, can be found at www.leg.state.vt.us/statutes/title06/chap215.htm.

4.0 Types of Permits

NPDES

Vermont is authorized to administer the NPDES program. As of 1997, no NPDES permits had been issued to Vermont CAFOs (Voorhees, 1997).

Other

LFO permits are administered by VDAFM (VDAFM, n.d.). A permit is required for the construction or expansion of barns, depending on the number of animals at the facility (NASDA, 1997). No permit is required to replace an existing barn in use for livestock or domestic fowl production at its existing capacity (VSO, n.d.).

5.0 Permit Coverage

LFO permits are required for farms that exceed 950 animal units (AUs) of horses, cattle, and sheep, or 2,375 swine each weighing more than 25 kilograms, or 95,000 laying-hens or broilers (if the facility has a continual flow water system), or 28,500 laying-hens or broilers (if the facility has a liquid manure system), or 4,750 ducks, or 52,250 turkeys if the livestock or domestic fowl are in a barn or adjacent barns owned by the same person, or if the barns share a common border or have a common waste disposal system (VSO, n.d.).

6.0 Permit Conditions

Approvals

No appraisal is required before construction of waste structures (NASDA, 1997).

Lagoon Design and Specifications

Waste lagoons must be constructed according to Natural Resources Conservation Service (NRCS) standards and specifications. Storage capacity must contain wastes following a 25-year, 24-hour storm event.

Discharge Rules

No discharge is allowed, and wastes from a 25-year, 24-hour storm event must be contained (VSO, n.d.).

Waste Management Plans

Under the LFO Rules, nutrient management plans must address the following [Note: the list is not exhaustive] (VDAFM, n.d.):

- Total amount of manure and other wastes produced
- Proposed crop and yield information
- Current manure analysis
- A sample of a daily spreading log sheet
- Compost management and waste product plan
- Crop history
- Application rates

To receive the required permit for LFOs, under Title 6, Chapter 215, Section 4851(b), the owner or operator of the regulated farm must demonstrate to the commissioner that the farm has an adequately sized manure management system to accommodate generated wastes and a nutrient management plan to dispose of wastes in accordance with AAPs (VSO, n.d.).

Separation Distances

New structures must be 50 feet from stream banks. Field stacking of manure is not allowed within 100 feet of shallow wells or springs.

Land Application Requirements

Wastes have to be applied at agronomic rates (NASDA, 1997).

7.0 Enforcement Information

General Enforcement Information

Permittees must comply with all permit conditions. Any permit not in compliance with the LFO Rules is in violation of the permit and is grounds for enforcement action, permit revocation or modification, or denial of a permit reissuance application, including expansions (VDAFM, n.d.). For more specific information about enforcement, refer to Title 6, Chapter 215, Section 4854.

General Inspection Information

Violators are identified by complaint and inspections. Routine on-site visits are required (NASDA, 1997).

8.0 Voluntary Programs

No state educational, training, or technical assistance programs for CAFO operators have been identified for Vermont. The state does not offer incentives (NASDA, 1997). The state does offer a small business compliance assistance program that provides general compliance assistance to businesses with less than 100 employees.

9.0 Additional State-Specific Information

Cooperative Extension Service

The University of Vermont Extension has a number of programs, including one for agriculture that seeks to promote Vermont's agriculture by providing information and educational programs to the public. More information about the Extension can be found at <http://ctr.uvm.edu/ext/>.

Comprehensive Nutrient Management Plan (CNMP) Certification

Vermont does not have a CNMP preparer certification program.

10.0 References

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Virginia's CAFO Program

1.0 Background

The current state pollution abatement general permit became effective November 16, 1994 and when it nears expiration on November 16, 2004, the Virginia Department of Environmental Quality (DEQ) will most likely write a new one. The new general permit would reflect any new environmental concerns and contain improvements based on experience gained under the current permit. The proposed new general permit would have to go through the public hearing process and be approved by the State Water Control Board (SWCB). Then producers could register under the new general permit for another 10 years.

On or before January 1, 2000 or prior to commencing operations, each commercial poultry processor operating in Virginia had to provide technical assistance to the poultry growers on proper management and storage of poultry waste and provide education programs on poultry waste nutrient management for the poultry growers with whom it contracts, as well as for poultry litter brokers and persons utilizing poultry waste (VA DEQ, 2001). The state just recently issued a Pollution Abatement General Permit for Poultry.

Based upon information provided to EPA by USDA it is estimated that there are 600 AFOs with from 300 to 1,000 animal units and 210 AFOs with more than 1,000 animal units in Virginia. These are primarily in the broiler sector (USDA, 1999; USDA, 2000).

2.0 Lead Regulatory Agency

The Virginia Department of Environmental Quality (DEQ), Water Programs regulates the NPDES program and pollution discharges from land application from treated waste and surface water. Information can be found at www.deq.state.va.us/water/.

3.0 State Regulations Regarding AFOs/CAFOs

Virginia is authorized to issue NPDES permits under the federal Clean Water Act. Authority to regulate CAFOs is also provided by VA Code Sections 62.1-44.15 through 44.30 and Code 9 VAC 25-30-10 et seq. The new Agricultural Stewardship Act applies to CAFOs with no state permits. There are no air quality regulations affecting CAFOs (NASDA, 1997).

4.0 Types of Permits

NPDES

DEQ requires Virginia Pollutant Discharge Elimination System (VPDES) permits for all point source discharges (such as ditches or pipes) to surface waters by businesses, governments, or individuals (Virginia Code Sections 62.1-44.15 through 44.30, and the Virginia Administrative Code 9 VAC 25-30-10 et seq). EPA maintains authority to review applications and permits for "major" dischargers, a distinction based on discharge quantity and content.

Other

Virginia also issues Virginia Pollutant Abatement (VPA) permits to address nonpoint source pollution, including the land application of animal waste. VPA permits prohibit discharges to

surface waters, carry specific waste storage and disposal requirements, and require a nutrient management plan for manure disposal, best management practices (BMPs), ground water monitoring, and sludge monitoring. The VPA permits have a term of 10 years (VA DEQ, 1996). A general CAFO VPA permit became effective on November 16, 1994.

CAFO operators/producers must file a complete Virginia Pollution Abatement (VPA) General Permit Registration Statement with the regional office of DEQ. It requests the owner's name and address, the location of the CAFO, and the number of animals to be fed. Typical requirements of a permit include the following:

- Prohibition of discharge of pollutants to surface waters.
- Waste storage and disposal requirements.
- For manure disposal, the possible preparation of a nutrient management plan.
- Best management practices such as berms and buffer strips to protect surface water.
- Ground water monitoring to detect possible contamination.
- Sludge monitoring to determine concentration of pollutants.

Virginia recently issued a Pollution Abatement General Permit for Poultry. This permit requires a registration statement (allowed online), a nutrient management plan, and information regarding dead bird disposal and new construction. This permit applies to all confined poultry feeding operations.

5.0 Permit Coverage

A permit is required for any CAFO having 300 or more animal units (AUs) utilizing a liquid manure collection and storage system. The permit requirement applies only to liquid manure handling systems. Broiler, turkey, and laying-hen operations using a dry manure handling system are excluded. The permit allows a CAFO to operate and maintain waste storage facilities and to apply waste to land.

DEQ may require smaller producers than those listed below to obtain a permit if public complaints and subsequent DEQ inspections indicate the producer is not following acceptable waste management practices.

- More than 200 dairy cattle
- More than 300 feeder and slaughter cattle
- More than 150 horses
- More than 750 swine (55 pounds or more)
- More than 2,000 sheep
- More than 16,500 turkeys (permit required only with liquid waste system)
- More than 30,000 broilers & laying hens (permit required only with liquid waste system)

6.0 Permit Conditions

The General Permit Requirements for Confined Animal Feeding Operations in Virginia can be found at www.ext.vt.edu/pubs/livestock/446-049/446-049.html.

Approvals

A Virginia Pollution Abatement (VPA) General Permit Registration Statement must be approved

by the local county, town, or city officials, indicating compliance with all local government zoning and ordinance requirements. This statement is called the local government ordinance form (LGOF). A copy of a letter from the Department of Conservation and Recreation (DCR) certifying approval of a nutrient management plan (NMP) must be attached to the DEQ permit registration form.

The LGOF ensures that a producer is in compliance with local county, town, or city planning and zoning ordinances. Once it has been determined that the operation appears feasible, detailed planning should begin. The producer will also need to obtain private assistance in designing the facilities and waste management system. These two steps will take the most time in getting a VPA permit.

Lagoon liners must be certified by a liner manufacturer, Professional Engineer, Natural Resources Conservation Service (NRCS) employee, or soil and water conservation district employee after installation.

Lagoon Design and Specifications

The regulation applies to all liquid waste storage facilities. Storage facilities must be designed to prevent point source discharges of pollutants to state waters except in the case of a storm event greater than a 25-year, 24-hour storm. The facility must provide adequate waste storage capacity to accommodate periods when the ground is frozen or saturated, periods when land application of nutrients should not occur because of limited or nonexistent crop nutrient uptake, and periods when physical limitations prohibit the land application of waste.

New waste storage facilities cannot be built on 100-year floodplains except under special circumstances. Lagoons must include either a synthetic liner of at least 20 millimeters thickness or a compacted soil liner of at least 1 foot thickness with a maximum permeability rating of 0.0014 inch per hour. After installation, the liner must be certified by a liner manufacturer, Professional engineer, NRCS employee, or soil and water conservation district employee after installation. The certification of the lagoon liner must be maintained on-site.

Lagoons installed to an elevation below the seasonal high water table (SHWT) or within 1 foot of the SHWT must have ground water monitoring wells. A minimum of one up-gradient and one down-gradient well should be installed for monitoring when they are required. When lagoons are installed below the SHWT, the top surface of the waste must be maintained at least 2 feet above the water table. The lagoon must maintain 1 foot of freeboard at all times, up to and including a 25-year, 24-hour storm.

Discharge Rules

No producer, regardless of size, is permitted to have a point source discharge of waste into surface waters, except in the event of a 25-year, 24-hour storm.

Waste Management Plans

The NMP is designed to ensure that no waste or potentially water-impacting nutrients from the waste reach either ground water or surface water supplies. The plan accounts for the production and utilization of all surplus (or waste) nutrients associated with the animal feeding operation. If the producer follows the NMP, the water supply in the local community and the state will be

protected. Because the NMP is critical to the protection of the environment, it is enforceable by law by DEQ once a permit is granted. The NMP is the major tool in the general permit used to protect the environment, so most of the management and reporting requirements in the permit are related to monitoring and enforcing the NMP.

According to the general permit regulation, each NMP must contain at a minimum the following information:

- Site map indicating the location of the waste storage facilities and the fields where waste will be applied
- Site evaluation and assessment of soil types and potential productivity
- Soil, water, and waste sampling and monitoring plans
- Storage and land area requirements
- Calculation of waste application rates
- Waste application schedules

Separation Distances

The general permit mandates buffer zones for the land application of waste. Local zoning ordinances may include greater distances or additional buffer requirements.

- Occupied dwellings, 200 feet (unless the occupant signs a waiver of the buffer zone)
- Water supply wells, 100 feet
- Surface application (surface water courses), 50 feet
- Subsurface injection (surface water courses), 25 feet
- Rock outcroppings (except limestone), 25 feet
- Limestone outcroppings, 50 feet

* Waste should not be applied in such a manner that it would discharge to sinkholes.

Land Application Requirements

Wastes must be land applied at agronomic rates. There are limits on land application in sensitive environmental areas (NASDA, 1997). Producers are required to keep records of when, where, at what rate, and to what crops the animal waste was applied. These records must be kept on-site and made available to DEQ personnel upon request.

Other Requirements

Records must be kept at the facility for 3 years to meet individual permit requirements and 2 years for general permits. Some permits require a record of freeboard height. No new waste storage facilities may be built on a 100-year floodplain unless it is able to contain wastes in the event of a 100-year storm.

7.0 Enforcement Information

DEQ personnel have the right of entry to the CAFO to inspect for compliance with the permit during regular business hours or whenever the facility is discharging waste.

8.0 Voluntary Programs

Virginia Cooperative Extension has started a new stewardship program for dairies. A National Pork Producers Council program is offered for Virginia farmers at least once a year. Farmers also get information through visits from soil and water conservation representatives.

Environmental Quality Incentives Program (EQIP) funding, state/federal cost-share programs, and tax credits are offered as incentives to farmers (NASDA, 1997).

9.0 Additional State-Specific Information

Cooperative Extension Service

Information regarding Virginia Polytechnic Institute and State University's Cooperative Extension can be obtained at www.ext.vt.edu/.

Comprehensive Nutrient Management Plan (CNMP) Certification

The Virginia Department of Conservation and Recreation administers a voluntary nutrient management planning, training, and certification program (VAC5-15-30). To obtain certification, an individual must submit an application and pass an examination. Certification is valid for 2 years. An individual certified as a nutrient management consultant by the state of Maryland or certified as a nutrient management specialist by the Commonwealth of Pennsylvania will be eligible for certification in Virginia by taking the examination (4VAC5-15-50). To renew a certification, an applicant must provide proof of completing one nutrient management plan or completion of 4 hours of continuing education.

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Washington's CAFO Program

1.0 Background

Based on information provided to EPA by USDA, it is estimated that there are 360 AFOs with from 300 to 1,000 animal units and 165 AFOs with more than 1,000 animal units in Washington. These are primarily in the dairy sector (USDA, 1999; USDA, 2000). Washington issued a new NPDES/State Dairy Operation General Discharge Permit on March 1, 2000. The permit became effective on April 1, 2000, and will be in effect through March 31, 2005.

2.0 Lead Regulatory Agency

The Washington Department of Ecology (WDOE), Water Quality Program, is responsible for regulation of CAFOs under the State Water Pollution Control Act. Under the State Water Pollution Control Act, any animal feeding operation that results in the disposal of wastes into waters of the state requires a discharge permit: discharges to surface waters would require an NPDES permit, and those to ground water would require a state waste discharge permit. Waters of the state include both surface and ground waters.

Normally, the Clean Water Act and State Water Pollution Control Act requirements are administered jointly.

3.0 State Regulations Regarding AFOs/CAFOs

Statutory authority for the regulation of Washington AFOs and CAFOs is given by Chapter 90.48 of the Revised Code of Washington (RCW) and the Washington Administrative Code (WAC) Chapter 173-220 and Chapter 173-216. State regulations for determining which animal feeding operations are CAFOs and subject to NPDES permitting are consistent with the federal definition in 40 CFR 122.23.

In April 1998 the Dairy Nutrient Management Act of 1998 was signed into law, requiring all of Washington's dairies to comply with the federal Clean Water Act. The following requirements are part of the law:

- Every Washington dairy must develop and implement a certified nutrient management plan (developed per NRCS specifications).
- All dairies are subject to periodic, unannounced inspection conducted by WDOE.
- WDOE will continue to respond to complaints about certain water quality violations.
- A comprehensive database will be created to track CWA compliance and improvements in nutrient management on individual farms.
- Farms can be penalized up to \$10,000 per day for water quality violations.
- Farms can be penalized for failing to register with WDOE and failure to meet deadlines for approval and certification of a plan.

- A zero tolerance policy on wastewater discharges during a period prior to plan certification and implementation will be enforced.

4.0 Types of Permits

NPDES

Federal and statewide CAFO program requirements are administered jointly. The Washington Department of Ecology issued the new NPDES/State Dairy Operation General Discharge Permit on March 1, 2000. It will become effective on April 1, 2000, and will remain in effect through March 31, 2005. The previous Dairy Farm NPDES and State Waste Discharge General Permit became effective on September 3, 1994, and expired on September 2, 1999. The current permit covers farms that meet the definition of a concentrated dairy feeding operation in RCW 90.64.010(3), meet the definition of a concentrated animal feeding operation (under CFR Part 122.23, Appendix B), or are significant contributors of pollution (RCW 90.64.020 or RCW 90.64.030). The permit does not cover the activities or discharges of an individual NPDES permit or state permit (until those permits have expired).

All dairies covered by the general permit are required to have a current nutrient management plan that meets the minimum elements established under RCW 90.64.026 and is approved by the local conservation district. Dairies that do not have a current plan were given 6 months to develop the plan, with up to an additional 8 months for implementation.

The general NPDES permit for dairy farms contains discharge limitations in accordance with federal regulations. In addition, the permit contains ground water effluent limitations that require the permittee to apply process waste to lands in accordance with the facility's nutrient management plan. Process waste discharges, including seepage from waste lagoons and leachate from silage, cannot violate the state Ground Water Quality Standards.

5.0 Permit Coverage

Permits are required for dairies consistent with the current definition of a CAFO in 40 CFR 122.23.

6.0 Permit Conditions

Approvals

No information was found in publically available sources.

Lagoon Design and Specifications

All new waste storage facilities constructed at facilities covered by the permit must be sited, designed, constructed, and operated and maintained consistent with the operation's nutrient management plan.

Discharge Rules

If a waste discharge occurs (except during the 25-year, 24-hour storm event), the permittee must record the following:

- The description, date, time, and duration of the discharge
- An estimated volume
- Name and location of the receiving stream
- Appropriate corrective steps

Then, the permittee has to notify the Department of Ecology within 24 hours if the discharge was to surface water. Written reports have to be submitted to the Department within 5 days (WDOE, 2000a).

Waste Management Plans

Under the 1998 Dairy Nutrient Management Act, all dairies are required to have a comprehensive nutrient management plan approved by their local conservation district by July 1, 2002. The act also requires that the dairy producer and local conservation district both certify these plans are fully implemented by December 31, 2003. The 1998 act also required the Washington Conservation Commission to develop minimum elements that all of the nutrient management plans must contain. The Conservation Commission approved these minimum elements on December 2, 1998. The minimum elements incorporate the technical specifications contained in the NRCS Field Office Technical Guide. The revised NPDES general permit for dairies contains a requirement for all covered operations to develop and implement a nutrient management plan.

Separation Distances

No information was found in publically available sources.

Land Application Requirements

Wastes can be applied to the land consistent with the site-specific nutrient management plan prepared for the operation.

Other Requirements

Facilities must keep records for 3 years.

7.0 Enforcement Information

WDOE and the State Attorney General have the authority to levy fines under Washington's Water Pollution Control Law (Chapter 90.48 RCW).

WDOE site investigations are triggered by complaints. Informal enforcement actions are preferred. Confirmed violations of the Water Pollution Control Act are referred to the local conservation district so that operators can voluntarily develop a conservation plan. Formal enforcement actions are taken when voluntary compliance cannot be achieved or when the violation is significant. Formal enforcement may include a notice of violation (NOV), administrative order, civil penalty, resource damage assessment, and referral for court action. Innovative approaches such as mediation, environmental audits, mandatory education, consent orders or decrees, and compensatory actions may be applied (USEPA, 1993).

Inspection Programs

Unpermitted CAFOs are identified by complaints, which are investigated by the Department of Ecology (*Focus*, 1993). Inspection requirements for a facility are determined at the initial site inspection. Under the general NPDES permit, facilities must allow an authorized representative of the WDOE to enter the property where a discharge was located; access records; inspect the monitoring equipment or method of monitoring required in the permit; inspect the collection, treatment, pollution management, or application facilities; and sample any discharge of pollutants.

As a result of the Chehalis watershed's approach, the CAFO/AFO program was coordinated with the TMDL program in that watershed. WDOE conducted inspections of all dairies in the watershed in support of the TMDL process (USEPA, 1998).

8.0 Voluntary Programs

The Conservation Districts and Washington Conservation Commission work with WDOE to protect water quality (New Dairy Waste Management Legislation, 1993).

Washington farmers have access to the regional Western Integrated Ranch/Farm Education (W.I.R.E) program.

9.0 Additional State-Specific Information

Cooperative Extension Service

Information about the Washington State University Extension is available at <http://rxt.wsu.edu/>.

Comprehensive Nutrient Management Plan (CNMP) Certification

Washington does not have a CNMP preparers certification program. The Washington Dairy Nutrient Management Act requires that all dairy farms licensed by the Washington Department of Agriculture have CNMPs approved by their local Conservation District by July 1, 2002. Both the Conservation District and the dairy producer are required to certify the nutrient management plan by December 31, 2003. Certification means the local conservation district certifies that a dairy producer has constructed or otherwise put into place the elements necessary to implement his or her dairy nutrient management plan and that the dairy farmer acknowledges that he or she is managing dairy nutrients as specified in his or her approved dairy nutrient management plan (WDOE, 2000b).

Case Studies/Innovative Programs

Good performance at wastewater discharge permit facilities is rewarded with a reduction in monitoring. More information is provided at www.wa.gov/ecology/biblio/972032wqfa.html.

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West Virginia's CAFO Program

1.0 Background

Based upon information provided to EPA by USDA it is estimated that there are 150 AFOs with from 300 to 1,000 animal units and 75 AFOs with more than 1,000 animal units in West Virginia. These are primarily in the broiler sector (USDA, 1999; USDA, 2000).

2.0 Lead Regulatory Agency

The West Virginia Department of Environmental Protection (WVDEP), Office of Water Resources, Permitting Section, manages the NPDES permitting program. Their web site is located at [www.dep.state.wv.us/wr/OWR_Website/permitting/main\(high\).htm](http://www.dep.state.wv.us/wr/OWR_Website/permitting/main(high).htm). The NPDES Permit Team is responsible for individual permitting of industrial facilities and municipal and domestic waste facilities. The General Permit Team is also responsible for permitting facilities with similar discharges, such as storm water, small sewage treatment, and water treatment facilities (WVDEP, 2000a).

3.0 State Regulations Regarding AFOs/CAFOs

Under the authority of West Virginia Code section 22-12-5c, the commissioner of the state Department of Agriculture may promulgate rules to protect the ground water of the state from contamination by fertilizers and manure. The general ground water protection rules are found under Title 61 Series 6C (Ground Water Protection). The regulations for CAFOs are found under West Virginia Code, Title 47, Series 10-13 on Special NPDES Programs. CAFOs in West Virginia are subject to the rules that regulate the disposal of dead poultry and other domestic fowl. The regulations are found under West Virginia Code, Title 61, Series 1C.

4.0 Types of Permits

NPDES

CAFOs in West Virginia are subject to the federal NPDES permit program, which is managed by the Office of Water Resources. The regulations for CAFOs are found under West Virginia Code Title 47, Series 10-13 on Special NPDES Programs.

Other

According to the Office of Water Resources, Permits Division, individual water pollution control permits will most likely be required for CAFOs. In addition, CAFOs may also be required to obtain the following types of permits (WVDEP, 2000c):

- Storm water associated with industrial and/or construction activity permit
- Industrial solid waste landfill permit
- Disposal of sewage sludge and/or domestic sewage at publicly owned treatment works permit
- Land application of sewage sludge and/or domestic sewage permit
- Underground injection control permit (class V)
- Remediation of petroleum-contaminated site permit
- Small sewage facility permit (maximum of 50,000 gallons per day)
- Certificate of approval for construction of non-coal dams

- Dredge or fill certification

5.0 Permit Coverage

West Virginia follows the federal definition of CAFOs section 47-10-13—Special NPDES Programs, at www.dep.state.wv.us/wr/OWR_Website/index.htm.

Anyone acquiring, constructing, installing, modifying, or operating a facility discharging treated or untreated sewage, industrial waste, other wastes, or effluent from these wastes into state waters must apply for an Individual Water Pollution Control Permit (WVDEP, 2000d).

6.0 Permit Conditions

The purpose of the Individual Water Pollution Control Permit is to ensure that technology-based waste treatment requirements are in place and the state's water quality standards are protected (WVDEP, 2000d).

Typical requirements of an owner/operator are as follows:

- Submit a complete permit application that describes the wastewater treatment facility as well as the anticipated effluent discharge quality
- Submit regular reports about the quality of the effluent discharge
- Prepare a ground water protection plan for industrial facilities

Approvals

No information was found in publically available sources.

Lagoon Design and Specifications

No information was found in publically available sources.

Discharge Rules

No information was found in publically available sources.

Waste Management Plans

Under the state's Department of Agriculture ground water protection rules, any person maintaining more than 1,000 animal units in a feedlot must submit a Nutrient Management Plan to the commissioner and implement the plan within 3 years of the plan's development. Any person maintaining more than 300 AUs in a feedlot in an area where potential for impairment of existing ground water quality is high, must submit a NMP to the commissioner and implement it within 5 years of the plan's development. The NMP is specified in the Nutrient Management Standard Practice #590 of the Soil Conservation Service Field Technical Guide (see 61 CSR6C).

Separation Distances

No information was found in publically available sources.

Land Application Requirements

No information was found in publically available sources.

7.0 Enforcement Information

The Environmental Enforcement Division provides compliance assistance to the regulated community by developing and conducting training classes, publishing "how-to" manuals, and conducting preclosure inspections. The Environmental Enforcement staff works with the public sector by investigating citizen complaints, assisting in school programs, and providing teaching staff for various conservation-oriented activities. The Enforcement Division will utilize criminal, civil, and/or administrative enforcement when all other attempts to gain compliance have been exhausted (WVDEP, 2000b).

The commissioner of the Department of Agriculture may conduct hearings, assess civil penalties, seek injunction relief, and issue orders that will minimize contamination of ground water.

Inspection Programs

The Environmental Enforcement Division performs routine inspections, compliance sampling inspections, and ground water sampling inspections on facilities permitted by the Office of Water Resources and the Solid Waste Section of the Office of Waste Management (WVDEP, 2000b).

Number of CAFO Facilities Permitted

No NPDES permits have been issued.

Support

The Environmental Enforcement Division's 49 employees are based out of four regional and two satellite offices throughout West Virginia. Information was unavailable on the Internet regarding how many FTEs conduct routine inspections of CAFOs (WVDEP, 2000b).

8.0 Voluntary Programs

Educational programs on the use of fertilizers and manures are intended to help farmers voluntarily prevent contamination of ground water. Farmers are encouraged to implement current best management practices (BMPs) that are recommended by the state. Voluntary programs also include training for persons that would be making recommendations to farmers about the application of manure and fertilizers. The commissioner must review voluntary as well as mandatory programs for effectiveness every 5 years and incorporate current BMPs.

The West Virginia Department of Agriculture addresses ground water protection by maintaining voluntary educational programs and providing financial incentives to persons who apply fertilizers and manure.

9.0 Additional State-Specific Information

Cooperative Extension Service

Information regarding the West Virginia University Extension Service is available at www.wvu.edu/~exten/.

Comprehensive Nutrient Management Plan (CNMP) Certification

West Virginia does not have a CNMP preparer certification program. West Virginia is an NPDES-authorized state; however, it has not issued any NPDES permits for CAFOs.

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Wisconsin's CAFO Program

1.0 Background

Based upon information provided to EPA by USDA in the year 2000, it is estimated that there are 720 AFOs with between 300 and 1,000 animal units and 140 AFOs with more than 1,000 animal units in Wisconsin. These are primarily in the dairy sector (USDA, 1999; USDA, 2000).

2.0 Lead Regulatory Agency

The Wisconsin Department of Natural Resources (DNR), Bureau of Watershed Management, Wisconsin Pollutant Discharge Elimination System (WPDES) Permit Program along with the Runoff Management Program regulates livestock operations with 1,000 AUs or more and operations with less than 1,000 AUs that have discharges that significantly affect water quality (WI DNR, 2000c).

The Wisconsin DNR is responsible for the issuance, reissuance, modification, and enforcement of all WPDES permits issued for discharges into the waters of Wisconsin. Wisconsin regulates discharges to both ground water and surface water. No person may legally discharge to state waters without a permit issued under this authority (WI DNR, 2000d).

3.0 State Regulations Regarding AFOs/CAFOs

The Wisconsin Pollutant Discharge Elimination System (WPDES) permit program was established by Chapter 283.13(1) of the Wisconsin Statutes. State wastewater regulations are found in Wisconsin Administrative Code (WAC) Chapters 100–299 and Wisconsin State Laws and Statutes (WI DNR, 2000d). The Animal Waste Management Program was developed through Wisconsin Administrative Code NR 243 to address pollution problems caused by the handling, storage, and disposal of animal waste on Wisconsin farms (WI DNR, 2000a).

Chapter Agriculture, Trade, and Consumer Protection (ATCP) 50 provides rules for constructing animal waste storage and runoff control structures, appropriately abandoning CAFOs, and information on cost-share programs.

WI DNR is currently in the process of codifying statewide performance standards and prohibitions that apply to livestock operations of all sizes. These include the following (WI DNR, 2000c):

- Manure management prohibitions
- Nutrient management
- Manure storage
- Soil loss from riparian fields

4.0 Types of Permits

NPDES

The statewide Wisconsin Pollution Discharge Elimination System (WPDES) permit is patterned after the federal NPDES permit and covers significant municipal, industrial, and animal waste facilities that discharge to the waters of the state. The WPDES permits can be general

(statewide) or specific (for individuals). The specific permits are divided into minor permits and major permits (those that are subject to oversight by EPA). CAFO operators require an Animal Waste Discharge Permit, which is one of five categories of WPDES permits issued to point source dischargers (WI DNR, 2000b).

5.0 Permit Coverage

The Animal Waste Management Program requires that WPDES permits be issued to the largest animal operations in the state, those with more than 1,000 AUs. WI DNR may determine that farms with less than 1,000 AUs must obtain a WPDES permit if that farm has discharged into state waters and/or failed to respond to a notice of discharge (WI DNR, 2000a).

6.0 Permit Conditions

Approvals

A site appraisal is necessary if a permit is required. Wisconsin requires construction approval for animal feeding operations and permits for operating those facilities.

Lagoon Design and Specifications

Design of storage structures must follow Natural Resources Conservation Service (NRCS) technical guidelines. A storage structure must have a 1-foot freeboard. Liner material may be made of clay, concrete, steel, or geomembrane. Allowable seepage is no more than 10^{-7} cm/sec (after federal requirements) or rates that meet construction standards (NASDA, 1997). Waste structures must have a storage capacity of up to 180 days. Facilities regulated under the Animal Waste Management Program that hold WPDES permits must have structures to control a 25-year storm event.

Discharge Rules

The discharge rules are patterned after the federal effluent limits that require no discharge. Waste lagoons must contain a 25-year, 24-hour storm event. Small facilities (fewer than 1,000) AUs are only required to design waste control structures to contain runoff from a 10-year, 24-hour storm.

Waste Management Plans

No information was found in publically available sources.

Separation Distances

There are no state standards for separation distance from dwellings or property lines in Wisconsin, but separation distance can be controlled at the county level through zoning. Distance from water wells is variable based on type of storage structure. Distance from the bottom of a waste structure to ground water must be at least 3 feet (NASDA, 1997).

Land Application Requirements

Nitrogen must be applied at agronomic rates. This is a requirement for permitted farms and cost-

share recipients (NASDA, 1997). Some facilities must keep a record of disposal or land application of wastes. No commercial fertilizer is to be applied on frozen or snow-covered ground on slopes of greater than 9 percent, unless the ground is contoured with sod or contour farmed with corn residue remaining, in which case allowable slope is 12 percent maximum. Nitrogen inhibitor may be required for fall manure applications on sandy or loamy soils that are warmer than 50°F. Wastes must be incorporated if application is close to water. Wastes must be incorporated within 72 hours if application occurs up to 200 feet uphill from a sinkhole or conduit to ground water. More application requirements are explained in the Nutrient Management Standard 590 Criteria Summary.

7.0 Enforcement Information

About 50 livestock operations with 1,000 AUs or more have been identified and issued discharge permits. Most of the regulatory activity has involved farms with fewer than 1,000 AUs. For these, the Department responds to complaints submitted by the public. Department staff work with the Wisconsin Department of Agriculture, Trade, and Consumer Protection (DATCP) and the counties in completing the investigation and determining whether a significant water quality impact exists. If such a problem does exist, the Department issues a notice of discharge to the owner, requiring action to alleviate the animal waste discharge. The program has been particularly important because of the regulatory ability to issue permits to those refusing to respond to the notice of discharge (WI DNR, 2000a).

Inspection Programs

Routine on-site inspections are not required, although facilities with 1,000 AUs or more are subject to periodic inspections. CAFOs that are not permitted may be identified through informal monitoring networks. Inspections are complaint-driven for operations with fewer than 1,000 AUs, which form the majority of the regulatory cases in Wisconsin. In these cases, DATCP and counties assist DNR in investigating complaints and determining water quality impacts.

The facility inspection process usually follows the same pattern, beginning with an individual talking with a local conservation district (LCD) staff member or county conservationist. County staff are invited to the facility, and the farmer is notified about the visit. DATCP is invited if the county staff does not visit. Next, it is determined whether a discharge is significant, with the focus being placed on water quality impact rather than on nutrient management. If necessary, informal enforcement activities begin (Section H. Wisconsin, source unknown).

8.0 Voluntary Programs

The Nutrient Management Program in conjunction with the University of Wisconsin Extension Nutrient Management Self-Directed Team has developed a Nutrient Education Farmer Education Program. The program will educate farmers about nutrient management practices for their individual programs. The curriculum is a combination of small group instruction, individual consultation, and on-farm field trials. The anticipated products of the education program are functioning nutrient management plans developed by farmers or farmer advisor teams. The pilot program began in 1999 with 11 counties participating. Most of the participants in the pilot program were dairy farmers; approximately 13 farms were enrolled per county. Many of the participants were required to develop a nutrient management plan or were in water quality management areas. The Farmer Education Curriculum will be available statewide in the fall of

2000 (University of Wisconsin-Madison, 2000a).

The University of Wisconsin-Extension Nutrient Management Self-direct Team and Nutrient and Pest Management Program hosted three workshops in August 2000 to train nutrient management planners. The workshops were 2 days long and were designed for nutrient management plan writers, including production agronomists and county-based conservation staff involved in nutrient management programs. The workshops provided in-depth training on nutrient management plan preparation (University of Wisconsin-Madison, 2000b).

9.0 Additional State-Specific Information

Cooperative Extension Service

Information regarding the University of Wisconsin's Cooperative Extension Service can be obtained at <http://www1.uwex.edu/>. Refer to the Voluntary Programs section above for a description of some of Wisconsin's Extension Service programs.

Comprehensive Nutrient Management Plan (CNMP) Certification

WI DATCP is authorized under Act 27 to adopt rules under Wisconsin's soil and water resource management program related to nutrient management on farms. The regulations adopted under Act 27, Agriculture, Trade, and Consumer Protection (ATCP) 50, Subchapter 5-7, require a nutrient management planner to develop nutrient management plans. Nutrient management plans are required for landowners with more than 1,000 AUs and permitted livestock operations. Nutrient Management Plans are also required in counties that have manure storage ordinances, which includes 42 of Wisconsin's 72 counties (WI DATCP, 2000b).

WI DATCP administers the Soil and Water Resource Management Program. The proposal to repeal ATCP 3.02(1)(h) and re-create ATCP 50 was released in January 2000. It is not clear if the proposal is final (WI DATCP, 2000a).

Nutrient management plans must be prepared in accordance with USDA National Resources Conservation Service (NRCS) Nutrient Management Standard 590. In addition, farmers must fill out a nutrient management agreement signed by the certified planner who developed the nutrient management plan. The nutrient management agreement provides information on the existing soil fertility and optimal usage of manure, legumes, organic byproducts, and commercial fertilizers on crop lands; it also indicates that the major product will be a nutrient management plan developed in accordance with NRCS Standard 590 and Technical Note WI-1 (WI DATCP, 2000a).

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Wyoming's CAFO Program

1.0 Background

Based upon information provided to EPA by the U.S. Department of Agriculture (USDA), it is estimated that there are 28 AFOs with from 300 to 1,000 animal units (AUs) and 23 AFOs with more than 1,000 AUs in Wyoming. These are primarily in the beef sector (USDA, 1999; USDA, 2000).

2.0 Lead Regulatory Agency

CAFOs are permitted through Wyoming's Department of Environmental Quality, Water Quality Division, Water and Wastewater Section, Engineering and Technical Services Branch.

Information regarding the CAFO program can be found at

<http://deq.state.wy.us/wqd/w&ww/cafo.htm>

3.0 State Regulations Regarding AFOs/CAFOs

Chapter 2, Discharges/Permit Regulations for Wyoming from 1974, and Waste and Wastewater Facilities, Section 29 Feedlots, are both used to regulate CAFOs in the state of Wyoming.

In 1997, Wyoming passed the Enrolled Act 49 that regulates confined swine feeding operations. On May 26, 1999, the governor of Wyoming signed the Chapter 20 Permitting, Design and Operation Standards for confined swine feeding operations, which addresses odor, vectors, setbacks, and financial assurance (WDEQ, 2000a).

The Water Quality Division (WQD) determined that permitted confined swine feeding operations do not require an NPDES permit. The basis of this determination is that the Wyoming statutes and regulations require that confined swine feeding operations be nondischarging facilities (WDEQ, 2000a).

4.0 Types of Permits

NPDES

Individual NPDES permits are required for CAFOs with more than 1,000 AUs. The state does not have a general permit. Individual NPDES permits are required to discharge to surface water.

Other

Cattle feedlots and other CAFOs, with the exception of swine operations that construct any waste treatment facilities, are required to obtain a permit to construct, as required by Chapter 3 and Chapter 11 of the WQD regulations (WDEQ, 2000a).

Wyoming permits confined swine feeding operations separately (USEPA, 1998). The Wyoming WQD has determined that permitted confined swine feeding operations do not require an NPDES permit. The reason for this determination is that Wyoming statutes and regulations require that confined swine feeding operations be nondischarging facilities (WDEQ, 2000a).

Wyoming issues construction permits for wastewater treatment ponds constructed on AFOs

(USEPA, 1998). Construction permits are used to protect ground water (NASDA, 1997).

5.0 Permit Coverage

Wyoming follows the federal definition of CAFOs. Individual NPDES permits are issued mostly to operations with more than 1,000 AUs. Smaller operations are permitted based upon complaints and inspection of conditions that pose threats to waters of the state (USEPA, 1998).

Chapter 20 applies to all swine feeding operations with 2,500 or more swine applying for a permit to construct a new facility or increasing the capacity of a presently permitted facility. Confined swine feeding operations that had or applied for a permit prior to February 27, 1997, continue to be regulated under the provisions of WQD Chapters 3 and 11.

Chapter 3, Permit to Construct, applies to all public water supplies; all private, municipal, commercial, and industrial (including mining) sewerage systems; treatment works; disposal facilities; biosolids management facilities; treated wastewater systems; and other facilities capable of causing or contributing to pollution (WDEQ, 2000d).

Confined swine feeding operations permitted under Chapter 20 are required to obtain a construction permit (WDEQ, 2000d). No person, except when authorized by a permit issued pursuant to Chapter 3 of the Act will (WDEQ, 2000d):

- Construct, install, or modify any public water supply, sewerage system, treatment works, disposal system, or other facility capable of causing or contributing to pollution.
- Construct, install, or modify any facility in noncompliance with the terms and conditions of an issued permit.
- Construct, install, or modify a facility with a permit that has expired or has been suspended or revoked.
- Commence construction or modification of any industrial facility capable of causing or increasing water pollution in excess of standards established by the department before a permit is obtained pursuant to W.S. 35-11-801 (c).
- Discharge wastes into an exempted or permitted treatment works, sewerage system, or disposal system that are inconsistent with the type or quantity of wastes for which the facility is designed.
- Land apply or surface dispose of biosolids or domestic septage.
- Reuse treated wastewater.

6.0 Permit Conditions

Approvals

No appraisal is needed before development. Waste structure designs must be approved by the Department of Environmental Quality (NASDA, 1997).

All construction plans and specifications submitted must carry the seal and signature of the designing engineer in accordance with W.S. 33-29-114 through 33-29-139 (WDEQ, 2000b).

Lagoon Design and Specifications

The following sections of Chapter 20 outline requirements for swine animal feeding operations:

- Section 33 — Animal Waste Collection Systems
- Section 34 — Animal Waste Storage Facilities
- Section 35 — Animal Waste Treatment Facilities

Discharge Rules

No discharge is allowed into existing wetlands.

Waste Management Plans

The animal waste management plan for swine feeding operations contained in Chapter 20, Permitting, Design, and Operation Standards, addresses the following (WDEQ, 2000b):

- The amount of animal waste to be generated at the facility and a description of storage methods.
- The estimated time period that animal waste must be stored before land application.
- The total amount of the controlling constituents produced by the operation.
- The controlling constituents requirements or uptake values for the vegetation or crops to receive the animal waste.
- The acreage to receive the animal waste except when solid wastes are sold or given away.
- A description of the animal waste conveyance or transportation method to get the animal waste to the land application sites.
- A demonstration that adequate and suitable land is available upon which to land apply the animal waste in accordance with the requirements of these regulations.
- The estimated application rate in terms of tons of animal waste and controlling constituents per acre, including the following:
 - A description of animal waste and soil sampling and analysis procedures to determine application rates.
 - A description of record-keeping systems for location, dates, and rates of animal waste application and for animal waste and soil testing results.
- The planned method and time of application.
- Written agreements with landowners for land application that must be included in the plan if animal waste is to be applied on property not owned by the permittee:
 - Agreements with landowners for land application must allow the division to assume the agreement in the event that a facility is relinquished.
 - Agreements with landowners for land application must provide right of entry for the division for the life of the agreement to monitor for compliance with the permit.
- Procedures and methods to control odors from animal confinement areas, lagoons, animal waste storage facilities, and land application sites.
- Procedures and methods to control vectors associated with confined swine feeding operations.
- If the animal waste is to be utilized for uses other than land application, the animal waste management plan must demonstrate that the protection of waters of the state, public health and safety, and the environment is equal to or greater than that provided by land application conducted in accordance with these regulations.

Separation Distances

A confined swine feeding operation must comply with W.S. 35-11-302 (a) (ix) (C). Swine confinement areas, animal waste storage facilities, or animal waste treatment facilities must not

be within (WDEQ, 2000b):

- One mile of an occupied dwelling without the written consent of the owner of the house.
- One mile of a public or private school without the written consent of the school's board of trustees or board of directors.
- One mile of the boundaries of any incorporated municipality without the resolution and consent of the governing body of the municipality.
- One-fourth mile of a water well permitted for current domestic purposes without the written consent of the owner of the well.
- One-fourth mile of a perennial stream unless it is proved to the division that potential adverse effects to the water quality of the stream can be avoided.

Land Application Requirements

Any solid waste transfer, treatment, storage, or disposal facility, as defined in Chapter 1 of the Wyoming Solid Waste Rules and Regulations, which is located within the boundaries of a confined swine feeding operation, must be permitted by WQD under the authority of Chapter 20 (WDEQ, 2000b).

All land application sites must be protected from upslope runoff by diversion ditches capable of intercepting the overland flow from a 25-year, 24-hour storm event. Diversion ditches are not required if it can be shown that a storm of this size will not have an impact on the site (WDEQ, 2000b).

Liquid animal waste should not leave the property where it is applied. Liquid animal waste must not be land applied within 200 feet of a perennial, intermittent, or ephemeral waterbody or water well permitted for current domestic purposes (WDEQ, 2000b).

Other Requirements

A management plan is a comprehensive plan for managing the animal wastes from a confined swine feeding operation. The management plan is a mandatory part of the application for a permit. It includes the following components (WDEQ, 2000b):

- Construction plan
- Operation plan
- Animal waste management plan
- Financial assurance, closure, and corrective action plan

In instances where a ground water monitoring program is required as determined by the administrator, the application must also include a proposed monitoring program to satisfy the requirements of Section 15, Chapter 3, Wyoming Water Quality Division Rules and Regulations (WDEQ, 2000b).

7.0 Enforcement

Enforcement of air quality regulations is tied to formal complaints as a nuisance (NASDA, 1997).

Violators are identified through complaints and inspections. Routine on-site visits were not required (NASDA, 1997). All permitted facilities are now rotated through an inspection program where they are inspected at least once every 5 years, with many being inspected yearly. Hog operations may be inspected as frequently as quarterly during construction and start-up (USEPA, 1998).

8.0 Voluntary Programs

Wyoming Department of Agriculture (<http://wyagric.state.wy.us/>) is the lead voluntary agency for CAFOs. The Wyoming Department of Agriculture NRS encourages the voluntary efforts of CAFO operators to prevent pollution of natural resources. NRS works with other sections of the Department of Agriculture and the Department of Environmental Quality to develop voluntary, rather than regulatory, programs to address surface water and ground water contamination as a result of the migration of pollutants (WDA, 1997). The Wyoming Department of Environmental Quality and the University of Wyoming Cooperative Extension Service are also sources for educational, training, and technical assistance programs (NASDA, 1997).

The CAFO Information and Education Program is one of the statewide grant programs designed to give CAFO operators the information they need to avoid pollution and improve water quality for the state. The program is co-sponsored by the Wyoming Department of Agriculture NRS. Wyoming farmers may also receive aid from the Western Integrated Ranch/Farm Education (W.I.R.E.) Program. W.I.R.E. educates farmers on the management of physical, biological, financial, and human resources of agriculture.

Wyoming recently entered into a Memorandum of Understanding (MOU) with the Natural Resources Conservation Service (NRCS) whereby NRCS can assist small AFOs with design and construction of whole-farm waste management systems and Wyoming will accept their work and oversight in lieu of requiring a construction permit for wastewater treatment systems, if such systems are necessary (USEPA, 1998).

In priority watersheds where there are a concentration of AFOs, Wyoming is facilitating the development of local producer improvement groups to conduct self-assessments or independent assessments and develop compliance plans where problem areas exist. Wyoming is also working to help small AFOs find financial assistance to develop and implement BMPs. A significant percentage of the Clean Water Act, Section 319 funds are used for this purpose (USEPA, 1998).

The Wyoming Association of Conservation Districts (WACD), in partnership with the Wyoming Department of Agriculture, is implementing a grant program aimed at assisting agriculture producers to address water quality concerns caused by CAFOs. Eight demonstration sites are being established around Wyoming. The technical assistance for these projects is being provided in part by USDA-NRCS. This program is partly funded through a Section 319 grant from the USEPA and WDEQ. WACD developed a brochure aimed at educating producers on laws and liabilities, potential pollutants, best management practices, and other issues related to confined livestock operations. Included in this brochure is a producer self-evaluation that can be utilized to determine whether the operation has the potential to impact water quality (WACD, 2000).

9.0 Additional State-Specific Information

Cooperative Extension Service

Information regarding the University of Wyoming's Cooperative Extension Service can be found at www.uwyo.edu/ag/ces/ceshome.htm.

Comprehensive Nutrient Management Plan (CNMP) Certification

Wyoming does not have a CNMP preparer certification program.

10.0 References

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APPENDIX A: METHODS

The methods and data overview presented below describe how the information for the update was obtained. These methods are similar to those initially used to compile the State AFO Compendium in February, 1999.

Methods

Information for the "State Compendium: Activities Related to Animal Feeding Operations" (State AFO Compendium) was gathered in part by compiling existing research and survey results.¹ Copies of state NPDES and manure management regulations, general and individual permits, and other programmatic information (e.g., informational brochures) were drawn from EPA files. In addition, the EPA Regional offices provided summaries of the state AFO programs within their respective regions.

The World Wide Web (WWW) was used to locate state government home pages and state agency/division home pages (environmental and agriculture). The Internet search focused on reviewing the information available from state departments of agriculture and state departments of natural/water resources. When available, state regulations and programmatic information addressing AFOs were downloaded from the WWW. National Association of State Departments of Agriculture (NASDA) and EPA Agricultural Compliance Assistance Centers Internet sites were also searched for relevant information and links. The Bureau of National Affairs Environmental Database was used to identify and collect state regulations most relevant to AFOs. Using the different data sources above, a profile detailing each state's AFO program was developed. The individual profiles were subsequently used to develop a national summary of AFO activities.

Data Overview

Because EPA has identified certain classes of AFOs as point sources under the NPDES program, most of the state programmatic and regulatory information gathered and presented in this document is directed at controlling water quality impacts from AFOs. Although some states have designed regulatory standards to control non-water quality impacts (e.g., set back requirements for odor control), the vast majority of information summarized in the profiles is based on state efforts to manage AFOs from the perspective of a wastewater management.

Given the constraints of the data collection efforts, and because many states have not addressed certain program elements, program information for every state is not complete. For example, it was difficult to find state program information about voluntary programs, the number of AFO/CAFO facilities and number of permits issued, enforcement efforts, and program support. Several states apparently do not have readily available information on state AFO-related programs or legislation. Despite some data gaps, the compendium is a comprehensive description of state program efforts, providing a solid overview of numerous aspects of most state programs. Sources are cited within the individual state profiles.

¹All of the information gathered for the AFO State Compendium was gathered within the requirements of the Paperwork Reduction Act. Consequently, this research effort did not require an Information Collection Request. Information was collected without surveying the states directly, and all data were gathered from readily available and already compiled sources of information.

APPENDIX B: ACRONYMS

AC	Administrative Code
AFO	Animal Feeding Operation
ASIWPCA	Association of State and Interstate Water Pollution Control Administrators
AU	Animal Unit
AWMP	Agricultural Waste Management Plan
BMP	Best Management Practice
CAFO	Concentrated/Confined Animal Feeding Operation
CES	Cooperative Extension Service
CFR	Code of Federal Regulations
CNMP	Comprehensive Nutrient Management Plan
CWA	Clean Water Act
DA	Department of Agriculture
DEM	Department of Environmental Management
DEQ	Department of Environmental Quality
DNR	Department of Natural Resources
EQIP	Environmental Quality Incentives Program
EPA	Environmental Protection Agency
FTE	Full Time Equivalent
LAS	Land Application System
MOA	Memorandum of Agreement
MOU	Memorandum of Understanding
NASDA	National Association of State Departments of Agriculture
NOD	Notice of Discharge
NOI	Notice of Intent
NON	Notice of Non-Compliance
NOV	Notice of Violation
NMP	Nutrient Management Plan
NRCS	Natural Resources Conservation Service
NRDC	Natural Resources Defense Council
NPDES	National Pollutant Discharge Elimination System
ONWR	Outstanding Natural Resource Water
PPP	Pollution Prevention Plan
QCP	Qualified Credential Professional
SCS	Soil Conservation Service
SPDES	State Pollutant Discharge Elimination System
SWCD	Soil and Water Conservation District
TMDL	Total Maximum Daily Load
USDA	United States Department of Agriculture
USEPA	United States Environmental Protection Agency
WIRE	Western Integrated Ranch/Farm Education

APPENDIX C: GLOSSARY

Activated Carbon Filter – water treatment process to remove taste, odor, some organic compounds, and radon.

Aerobic – in the presence of or requiring oxygen.

Anaerobic (anoxic) – in the absence of oxygen.

Anaerobic digestion – biological process which is used to produce biogas (a low energy gas which is a combination of methane and carbon dioxide) from the biodegradable organic portion of livestock manure. This gas can be used as an energy source for the farm. In addition to the gas, the remaining semi-solid (which is relatively odor-free but still contains most of its nutrients) can be used as a fertilizer.

Animal unit – unit of measurement for any animal feeding operation calculated by adding the following numbers: the number of slaughter and feeder cattle and dairy heifers multiplied by 1.0, plus the number of mature dairy cattle multiplied by 1.4, plus the number of swine weighing over 55 pounds multiplied by 0.4, plus the number of weaned swine weighing 55 pounds or less multiplied by 0.1, plus the number of sheep multiplied by 0.1, plus the number of horses/mules multiplied by 2.0.

Backgrounding – growing program for feeder cattle from time calves are weaned until they are on a finishing ration in the feedlot.

Barrow – male hog that has been castrated.

Bedding – can drastically affect the characteristics of the manure. Whether it is used for the comfort of the animal or added to absorb the excess moisture, it must be taken into consideration in the design of the storage facility. Some systems require that the manure be a consistency that stays in a pile and does not flow. To produce this consistency, add bedding material such as sawdust or wood chips to the manure. The moisture content of the bedding determines the amount of bedding needed. The drier the bedding material, the less you will need to add. Common bedding materials include: straw, sawdust, wood shavings, shredded newspaper, and sand.

Best management practice (BMP) – structural or managerial technique recognized as the most effective and practical means of controlling pollution for an agricultural, urban, forested, or mining area.

Biochemical Oxygen Demand (BOD) – laboratory measurement of the amount of oxygen consumed by microorganisms while decomposing organic matter in a product. BOD levels are indicative of the effect of the waste on fish or other aquatic life which require oxygen to live, and though not a specific compound, it is defined as a conventional pollutant under the federal Clean Water Act.

Biodegradeable – capable of being broken down (decomposed) by microorganisms.

Boar – male pig used for any breeding purpose.

Bovine – refers to a general family grouping of cattle.

Broiler – meat-type chicken marketed at 6.5 weeks of age. Live weight at market averages 4 to 4.5 pounds per bird.

Buffer Zone – neutral area which acts as a protective barrier separating two conflicting forces. An area which acts to minimize the impact of pollutants on the environment or public welfare. For example, a buffer zone is established between a composting facility and neighboring residents to minimize odor problems.

Bull – bovine male, usually denoted animals of breeding age.

Bullock – young bull, typically less than 20 months of age.

By-product – product of considerably less value than the major product. For example, the hide and offal are by-products while beef is the major product.

Calf – young male or female bovine animal under 1 year of age.

Calve – giving birth to a calf. Same as parturition.

Capon – castrated male chicken.

Chemical Oxygen Demand (COD) – laboratory measurement of the amount of oxygen used in chemical reactions that occur in water as a result of the addition of wastes. A major objective of conventional wastewater treatment is to reduce the chemical and biochemical oxygen demand.

Coliform Bacteria – microorganisms which typically inhabit the intestines of warm-blooded animals. They are commonly measured in drinking water analyses to indicate pollution by human or animal waste.

Commercial Waste – materials originating in wholesale, retail, institutional or service establishments such as offices, stores, markets, theaters, hotels and warehouses.

Chick – young chicken, either male or female.

Cock – adult male chicken (rooster).

Cockerel – young male chicken between 10 and 32 weeks of age.

Conditioning – treatment of cattle by vaccination and other means prior to putting them in the feedlot.

Cow – sexually mature female bovine animal that has usually produced a calf.

Cud – bolus of feed that cattle regurgitate for further chewing.

Custom feeding – cattle feeders who provide facilities, labor, feed, and care as a service but they do not own the cattle.

Cut-and-fill – technique by which the depth of a lagoon is constructed by excavation and by filling in, so that the basin is partially above and partially below ground.

Dehydrator – used to separate manure solids from liquids. Usually have a large rotating drum with a sizable electrical power demand. Fresh manure cannot be dried in the dehydrator since it tends to form balls in the dryer. Only manure with a moisture content between 40% and 60% should enter the dryer. Although dehydrators can remove nearly all manure moisture, there are several problems which make them not very economical.

Denitrification – biochemical conversion of nitrate (NO₃) to nitrite (NO₂), ammonia (NH₃), and free nitrogen (N), as in soil by microorganisms.

Diversion terrace – controls the flow of uncontaminated rainwater and snowmelt, directing it around areas where manure could contaminate the water, such as feedlots and manure stacks. If dilution water is needed, regulated amounts of uncontaminated water can be allowed to enter and remain in the storage areas while the remaining portion is to be diverted away from all livestock facilities.

Drainage water – some solid and semi-solid storages are designed to drain the liquids from the storage. Since manure, especially cow manure, will seal along the walls and floor, vertical drainage must be provided along the walls of a solid manure storage. A six inch layer of land-disposable porous media, such as corn cobs, should be provided on the floor for horizontal flow to the floor drains. Gutters or floor drains with underground pipes may be used to direct the drainage to a water-tight storage. In some states, the drainage may be diverted to a grass infiltration area. Check with state authorities for restrictions. Other possibilities are to build a roof over the storage or add large amounts of bedding in order to eliminate the addition of extra water.

Drake – male duck

Duck – term used to connote both sexes but is also used to refer to the female gender. Ducks are marketed at 35 days of age at an average live weight of 7 pounds per bird.

Duckling – young duck, either male or female.

Effluent – solid, liquid, or gaseous wastes that enter the environment as a by-product of man-oriented processes.

Ensiling – process by which fodder or feed is stored in a silo in order to be converted into ensilage, a more succulent feed for livestock. The silo is an air tight structure that allows for anaerobic acid fermentation. The lack of oxygen and acid conditions prevent spoilage and preserve the value of the feed for several months.

Evaporation ponds – used in regions where evaporation exceeds rainfall to separate manure solids from liquids. Constructed to remove moisture from livestock manure. The pond should be large enough to hold all the manure during the wet season, plus runoff from the largest 24-hour storm expected to occur over a period of 25 years.

Eutrophication – degradation of water quality due enrichment by nutrients, primarily nitrogen (N) and phosphorus (P), which results in excessive plant (principally algae) growth and decay. Low dissolved oxygen (DO) in the water is a common consequence.

Farrowing – stage during which the pigs are born, and kept until they are weaned from the sow.

Fed cattle – steers and heifers that have been fed concentrates, usually for 90-120 days in a feedlot.

Feeder – (1) cattle that need further feeding prior to slaughter. (2) producer who feeds cattle.

Feeder pig – pig weighing between 30 and 90 pounds.

Feedlot – enterprise in which cattle are fed grain and other concentrates for usually 90-120 days. Feedlots range in size from less than 100-head capacity to many thousands.

Feedyard – cattle-feeding facility.

Finish pig – to feed a pig until it reaches market weight, 250-260 pounds.

Finished cattle – fed cattle whose time in the feedlot is completed and are ready for slaughter.

Finishing stage – stage leading to and including full adulthood for swine is called the finishing stage. The pigs remain here until they reach market weight, 240 to 260 pounds.

Forage – grazed or harvested herbaceous plants that are utilized by cattle.

Freeboard – volume held in reserve to minimize chances of the manure contents overflowing and causing contamination in case of a heavy rainfall. Freeboard is typically sized to hold the water draining into the storage from the highest intensity 24-hour rainfall expected to occur within 25 years.

Fryer – term is used interchangeably with broiler.

Gander – male goose.

Goose – term used to connote both sexes but is also used to refer to the female gender.

Gosling – young goose, either male or female.

Gestation – pregnancy; 112 - 114 days for pigs.

Gilt – young female that has not farrowed her first litter.

Growing stage – occurs after the piglets leave the nursery. Pigs are larger and better able to take care of themselves at this stage, so larger group pens and a less controlled environment is needed. They are kept here until they reach 120 to 140 pounds.

Hammermill – type of crusher or shredder used to break up waste materials into smaller pieces.

Heifer – young female bovine cow prior to the time that she has produced her first calf.

Heiferette – heifer that has calved once and is then fed for slaughter, the calf has usually died or been weaned at an early age.

Hen – adult female chicken or turkey.

Herd – group of cattle (usually cows) that are in a similar management program.

Hydrologic connection – interflow and exchange between control facilities or surface impoundments and waters in the state through an underground corridor or connection.

Interface layer – 3-4 inch layer of compacted manure next to the soil surface. This layer acts as a seal or anaerobic zone for denitrification, reducing liquid percolation down into the soil.

Keet – young guinea hen, either male or female.

Lagoon – reservoir or pond built to contain water and animal wastes until they can be decomposed either by aerobic or anaerobic action.

Land application – the removal of wastewater and waste solids from a control facility and distribution to, or incorporation into the soil mantle primarily for beneficial reuse purposes.

Layer – mature egg-type chicken over 32 weeks of age.

Leachate – liquids that have percolated through a soil and that contain substances in solution or suspension.

Liner – any barrier in the form of a layer, membrane or blanket, naturally existing, constructed or installed to prevent a significant hydrologic connection between liquids contained in retention structures and waters in the state.

Liquid manure – usually less than 8.0% solids. Wash water, runoff, precipitation, and so forth are added, if needed, to dilute the manure and lower the solids content.

Long yearling – animal between 19 months and 2 years of age.

Manure – fecal and urinary defecations of livestock and poultry; may include spilled feed, bedding, or soil.

Nitrification – biochemical oxidation of ammonia (NH₃), ammonium (NH₄), or atmospheric nitrogen (N) to nitrate (NO₃) or nitrite (NO₂).

Nursery building – used for the piglets after they are weaned. Pigs are kept in small groups in this heated, well-insulated enclosure until they reach 60 to 80 pounds. A wire or other very porous floor is used to maintain sanitary conditions. The nursery slotted phase is often broken up into two growth stages, called, respectively, a "hot" and "cold" nursery, reflecting the room temperatures used.

Open – refers to nonpregnant females.

Open lot – pens or similar confinement areas with dirt, concrete, or other paved or hard surfaces wherein animals or poultry are substantially or entirely exposed to the outside environment except for small portions of the total confinement area affording protection by windbreaks or small shed-type shade areas.

Packing plant – facility in which cattle are slaughtered and processed.

Pit system (deep) – concrete floor and masonry or concrete side walls, is constructed 2-6 feet below the ground. The cages are then built 8 feet or more above the pit floor. Because the pit is built below ground level, care must be taken to insure that surface and ground water are not contaminated. Foundation drains and external grading to direct surface water away help to keep manure dry, so that natural composting might occur. The most important benefit of the deep- pit is that manure can be stored for several months or more.

Pit (shallow) – most frequently used of all the pits. The 4-8 inches deep concrete pit is located 3-6 feet below the cages. The manure and other waste is mechanically scraped or flushed out with water to a storage area, or directly loaded into a spreader for direct field application.

Porous belt – used to separate manure solids from liquids. Liquids are pressed through a porous belt by rollers while the solids are carried along on top of the belt.

Poult – young turkey, either male or female.

Preconditioning – preparation of feeder calves for marketing and shipment, may include vaccinations, castration, and training calves to eat and drink in pens.

Process wastewater – any process generated wastewater directly or indirectly used in the operation of a CAFO (such as spillage or overflow from animal or poultry watering systems which comes in contact with waste); washing, cleaning or flushing pens, barns, manure pits, direct contact swimming, washing, or spray cooling of animals; and dust control), and precipitation which comes into contact with any manure or litter, bedding, or any other raw material or intermediate or final material or product used in or resulting from the production of animals or poultry or direct products (e.g., milk, meat or eggs).

Process generated wastewater – any water directly or indirectly used in the operation of a CAFO (such as spillage or overflow from animal or poultry watering systems which comes in contact with waste; washing, cleaning or flushing pens, barns, manure pits, direct contact swimming, washing, or spray cooling of animals; and dust control) which is produced as wastewater.

Pullet – young female chicken between 10 and 32 weeks of age, usually this term denotes egg-type birds.

Retention facility or retention structure – all collection ditches, conduits and swales for the collection of runoff and wastewater, and all basins, ponds, pits, tanks and lagoons used to store wastes, wastewaters and manures.

Roaster – meat-type chicken marketed at 9 weeks for males and 11 weeks for females. Live weight at market ranges between 6 and 8 pounds per bird.

Rotating screen – used to separate manure solids from liquids. Solids pass between a series of cylindrical screens and press rollers into a storage unit while the liquids drain away through the screens to a liquid storage unit.

Roughage – feed that is high in fiber, low in digestible nutrients, and low in energy (e.g., hay, straw, silage, and pasture).

Ruminant – animals which have even-toed hooves and chew their cud. Such farm animals include

cattle, sheep, and goats.

Semi-solid manure – little bedding and usually no extra water added. In most cases, little drying occurs before handling. During wet weather the manure scraped from open lots can also be semi-solid in nature.

Settling basins – should be placed between the lot and a holding pond or infiltration area to remove large manure solids that float or settle from the runoff. Paved shallow basins or channels provide for easy cleaning after runoff occurs. An expanded metal screen and perforated pipe riser can be used to settle out solids, and a 10-12% slope at the ramped entrance of the basin facilitates clean-out with front-end loaders.

Settling channel – shallow, flat-bottomed waterway with a slight slope to maintain low velocities of runoff so that solids will settle and dry naturally. The channel is usually tractor scraped and thus has a bottom width of 10 feet or more. Settling channels should be cleaned when solid accumulations reduce channel volume, and when solids are dry enough to handle with a scraper and loader.

Settling tanks – controls feedlot runoff. They are usually made of concrete and installed as an underground unit in a waste transport pipe. This type of unit may be difficult to clean out, and floating solids such as straw must be retained with a baffle.

Short yearling – animal is over 1 year of age but under 18 months of age.

"Show list" or "show pens" – slaughter cattle that are ready for the cattle feeder to "show" the packer buyers.

Silage – forage, corn fodder, or sorghum preserved by fermentation that produces acids similar to the acids used to make pickled foods for people.

Sire – male parent.

Sludge – heavy, slimy residue remaining from the treatment of municipal and industrial water and wastewater. Digested sewage sludge remains after decomposition under controlled temperature, pH, and mixing in a digester tank.

Solid manure – combination of urine, bedding, and feces with little or no extra water added. It is usually found in loafing barns, calving pens, and open lots with good drainage.

Sow – female that has farrowed at least one litter.

Squab – young pigeon, either male or female.

Spent hen – hen that is approximately 1½ years of age who is at the end of her production cycle.

Stationary screen – used to separate manure solids from liquids. Solids move across the face of an inclined screen to a storage unit while liquids pass through and drain to a liquid storage.

Steer – bovine male castrated prior to puberty.

Stewing hen – broiler breeders which weigh 5.4 pounds and are slaughtered for stewing.

Stocker – weaned cattle that are fed high-roughage diets (including grazing) before going into the feedlot.

Tom – male turkey.

Veal – meat from very young cattle (under 3 months of age). Veal typically comes from dairy bull calves.

Vibrating screen – used to separate manure solids from liquids. Screen vibrates rapidly to assist with the movement of solids across the screen.

Waste – manure (feces and urine), litter, bedding, or feedwaste from animal feeding operations.

Wastewater – water containing waste or contaminated by waste contact, including process-generated and contaminated rainfall runoff.

Glossary References

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